COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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Sunny Florida's First

Two Miami-based companies recently installed the first Sanders 720 Display computing system for commercial use in Florida. Watching a battery of four of the Display consoles in action are S.W. Langer, City Gas Co. president, and Monte Ellis, International Computing Service Inc. systems manager.

More Non-IBM Terminals For SBC's Call/360 Service

NEW YORK — The Service Bureau Corp. has intensified its marketing of the time-sharing services of Call/360 to people who do not have IBM hardware. As a result, manufacturers of any type of terminal now have a "standing invitation" to have it tested by the Service Bureau Corp. so that people using the non-IBM terminals can obtain access to the Call/360 services.

The purpose of this move, according to SBC, is to permit its customers maximum flexibility when using the system. Service is provided for different types of terminals by having each type use a special telephone number which automatically connects the terminal with the proper interface.

Terminals Now Available

Terminals currently supported by the Basic system include Teletype 33 and 35 with or without paper tape, two Vernitron terminals similar to the Teletype units, the Dura 1021 and 1041 teletypewriters, any half-duplex GE terminals, plus the standard IBM terminals already supported.

With the Datatext system, the IBM 2741, the Datel terminal,

(Continued on Page 13)

Is SICSIC Sick?

CAMBRIDGE, Mass. — The ACM's Special Interest Committee on the Social Implications of Computing (SIC/SIC) has been dissolved owing to an apparent lack of interest. The action was taken on Jean Sammet's recommendation as the chairman of the ACM Committee on Special Interest Committees and Groups because the committee had far outlived its official one year charter period and showed no signs of activity. The recom-

(Continued on Page 13)

Merger Agreement Made Between Xerox and SDS

Special to Computerworld

LOS ANGELES — C. Peter McColough, president of Xerox Corp., and Max Palevsky, president of Scientific Data Systems, announced jointly on Feb. 7 that tentative agreement was reached to combine the two companies.

The officers stated that the proposed transaction has not been presented to the board of directors of either company and was subject to approval by both boards as well as the stockholders of both companies.

The proposed transaction is also subject to receipt of a tax ruling satisfactory to both parties. The terms of the exchange will call for one share of Xerox for two shares of SDS common stock, the company stated.

Guide-Share Merger Is Killed in Balloting

NEW YORK — The Guide-Share merger is dead, it was learned last week after the ballots were counted here by Price Waterhouse & Co.

Whether the vote went strongly against the proposal was not revealed and, under current policy, will never be known. The actual counts will not be released, Share and Guide officials agreed.

No plans are underway to reopen merger discussions. In any case, it is not expected that they would achieve any substantial support if they were restarted. The opinion of many members is that the amount of effort and discussion which has already gone into the proposal is so great that any further consideration would be uneconomical from the users' point of view.

Collaboration between the Share and Guide technical groups will continue at or above its past level. A number of the committees became considerably closer during the past year when it looked as though the merger proposal, which had been supported by the executive committees on both sides, would be successful.

Background

The merger proposals became formal last February when they were distributed to the members. Considerable work had been done on them before that date. An experimental joint meeting of the two organizations was held in Atlantic City last year because it was felt that the large size of the merged organization might make the merger impractical. At that time, an alternate report made on the problems of the organizations suggested that the leadership difficulties which were currently being felt came from the problem of an already too-large size rather than from being separate bodies. It suggested that action should be taken to trim the membership of various parts of the organization to permit streamlined action. The report also argued that as a result of the lack of a clear sense of direction, the influence of the organizations on IBM was lower than it need be.

No Real Change?

After the result became known, many people, particularly committee members, said that the merger wasn't important, provided that the committees joined together and worked together on various projects.

"In some committees, it takes a year before the Guide and Share people can reach common ground and that gives IBM a year's extra time before they have to answer us," was one comment.

The recent antitrust cases against IBM were not thought to have seriously influenced the vote, according to members of the organization contacted by *Computerworld* after the result was known, and it was felt that no one would ever really know why the merger failed.

Heavy Snow Hinders Computerworld

NEWTON, Mass. — The storm which plastered most of the Northeast with snow last weekend resulted in some handicaps for production for this issue of *Computerworld*.

Staff members who were working on Sunday to prepare this issue for the printers were all able to reach home with the exception of CW's associate publisher, Walter Boyd. He had to spend the night in the CW office.

Most of the CW staff were unable to reach the office on Monday, and the printer could not make the normal pick-ups because of heavy snow accumulations.

Computerworld apologizes for the delay in delivering this issue to our subscribers.

Individuals Right to See Own Credit Records Proposed

WASHINGTON, D.C. — The right of an individual to see his personal credit bureau record is part of the new guidelines proposed by the Associated Credit Bureaus, Inc. members, said Representative Cornelius E. Gallagher (D-N.J.) while discussing new bearings on privacy in credit reporting and credit authorization. Currently, people are barred from seeing their own records.

The new guidelines, if accepted and approved by the membership, would require, among other things, that an individual have access to his credit bureau records, receive notification of bad ratings from credit bureau users, and be able to attempt to correct information he believes wrong before it is entered into his file, our source stated.

An informed source believes that the action by the ACB was taken in the light of recent congressional criticism of credit bureau practices, and is intended to forestall further action in this area.

Senator William Proxmire has introduced, into the Senate, amendments to the Truth-In-Lending Act passed by Congress last year which are called the Fair Credit Reporting Bill.

The new bill would: require credit reporting agencies to insure the confidentiality of an individual's credit rating; permit people, on request, to correct information which might adversely affect their credit ratings; limit the information collected about the individual (no hearsay or irrelevant data); notify an individual when derogatory credit data has appeared, and give him an opportunity to challenge it before it is entered into his credit file; require that credit bureaus guarantee that only legitimate users may have access to his credit files; require credit bureau users to notify an individual when his credit is denied, and give the name and address of the source credit bureau.

Proxmire stated, "I have received numerous letters from people badgered by computer-written letters hounding them for goods they have never received. For example, a California credit reporting agency mistakenly labeled a whole file drawer of good credit risks as bad credit risks."

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Summit Meeting

IBM Board Chairman Thomas J. Watson, Jr., right, confers with Burke Marshall, center, and Nicholas deB. Katzenbach in Armonk, N.Y. The occasion was the promotion of Marshall from vice-president and general counsel to senior vice-president. Katzenbach, attorney general in the Johnson administration, succeeds Marshall as a vice-president and general counsel. Marshall also served with the Justice Department before joining IBM.

Honeywell Has No Objection To 'Nonapproved' Disk Packs

By a CW Staff Writer

WELLESLEY HILLS, Mass. – Honeywell EDP, a major user of Control Data disk drives, has had "only insignificant" problems with the drives when using disk packs made by independent manufacturers, Honeywell said last week. This contrasted sharply with the Control Data statement [CW, Feb. 12] that such disk packs had potential quality control problems which caused Control Data to void its warranty on any disk drives using them.

The Honeywell spokesman said that the company had not found it necessary to void the warranties they provided to their users nor to increase the maintenance charges when disk drives were used with any of the packs now on the market. He also said that the same situation applied in the United States and in England.

The relationship between the Control Data drives and the various packs came into the limelight recently when an English computer manufacturer, International Computers, Ltd., increased by 50% the maintenance charges on its disk drives – which are manufactured by Control Data – when nonapproved packs were used. Subsequently Control Data said that it had not approved any other packs for its drives than its own and IBM's but volunteered to evaluate other manufacturers' packs if they were prepared to pay the $25,000 to $30,000 cost of the evaluation.

The technical basis for the increased charge by Control Data was to compensate for quality control which CDC said had been noticed in connection with some nonapproved manufacturers.

Three Cases Quoted

ICL in its original announcement did quote three specific instances in which disk packs had been proved to cause damage to disk drives, one of which cost $1500.

IBM Position

In another development, an IBM spokesman told *Computerworld* that his company had never found it necessary to void the warranty on IBM disk drives after they had been damaged by a particular disk pack. He explained that IBM asks its customers in such cases to reimburse IBM for the cost of rehabilitating the drive but that the full warranty is continued.

Control Data had said that its action in voiding the warranty on disk drives as soon as they were used with nonapproved packs was essentially the same as the IBM policy.

New AFIPS Constitution Adopted After Two Year's Work

MONTVALE, N.J. – The American Federation of Information Processing Societies (Afips), which runs the Spring and Fall Joint Computer Conferences, has adopted a new constitution. The adoption, which had to be unanimous under the previous constitution, culminated an effort of two or three years to obtain a draft acceptable to all parties.

The new constitution, approved late last month, passed through its final processes quickly. It was accepted and ratified by the various societies which make up the federation within a month after preparation of the final draft.

New Methods

The constitution provides for a new method of dividing the profits from the spring and fall conferences and for allocating directorates for the Afips Board. Under the new arrangements, the division of money is prorated according to the fees that have been paid by the member societies. These fees are related to the number of members in each society.

Richard Canning, introducing the proposed constitution to the ACM Council, argued that it was a necessary first step in providing for a more flexible organization for Afips. Apparently, under the new constitution – copies of which are not yet available from the federation – there is no requirement for unanimity on actions. Canning's argument was that while there might be parts of the constitution which the ACM might not like, any attempt to change it further would endanger any improvements that had been made.

Three Full Members

Afips currently has only three full members, the ACM, the Computer Group of the Institute for Electrical and Electronics Engineers, and Simulation Councils Inc.

SJCC Exhibitors Turned Away

BOSTON – The Spring Joint Computer Conference, to be held here in May, has attracted so many exhibitors that it would have been possible to sell nearly double the amount of available space and to have sold it three months before the show opened. As a result, many would-be exhibitors have not been given space and others have had their space drastically cut down.

Particularly hard hit are the East Coast companies. They had hoped to get more space than they had needed at the fall conference because that was held so far away. Under the rules adopted by Afips, no one was allocated more room on the East Coast than he had in the Brooks Hall Exhibition in San Francisco in December. Would-be exhibitors felt that, for regionally concentrated companies, this was a hard ruling. They pointed out that during the East Coast conference last spring, the number of people who attended from outside the region amounted to only about 15% of the total attendance.

"It is impractical for us to have to take unnecessarily large exhibit areas 3000 miles away just to obtain adequate areas on our own doorstep," one disappointed exhibitor told *Computerworld*. "These rules should have been published earlier so that we could have effectively protested instead of being faced with a *fait accompli*."

Time-sharing companies also were particularly hit, both because of their regional characteristic – most time-sharing companies have comparatively restricted areas – and also because they had been allocated only a very small portion of the space at the 1968 San Francisco exhibition. That show had also been oversold and allocations were based on the previous three years. As time-sharing had hardly existed commercially during that period, the space provided for time-sharing companies was much under the amount that could have been used.

Cheerful News for Future

Afips assured the exhibitors, however, that there would be no difficulty in the future. The next conferences already have been scheduled and Afips believes that there will be adequate space for all would-be exhibitors.

EDP Plan For Calif.

SACRAMENTO, Calif. – This state, which spends $40 million annually on EDP (excluding the University of California) has adopted a short-term master plan "to assure that appropriate use is made of computer technology."

Actions under the plan include some consolidations of facilities and the development of an improved method for watching expenditures. It is also intended to develop methods to evaluate the effectiveness of data processing.

Memorex Disks Priced at $360

SANTA CLARA, Calif. – Memorex Corp. has dropped the official price of its 2311-compatible disk packs to $360 – and is providing quantity discounts to bring the packs down to $300 if ordered in quantities of 50 or more.

At the same time, Memorex provided for four lease plans which, depending upon the length of time involved, made the lease price between $9.50 and $12 per month.

These prices contrast with the IBM price of $490 per pack, and $15 per month leasing.

Purchase options on the new prices were established at 60% during the first two years' rental.

IBM Explains Delivery Schedules

NEW YORK – In an unusual campaign, apparently part of IBM's response to antitrust charges of preferential deliveries, IBM's branch offices have sent identical, hand-signed letters to many of their customers to explain their delivery methods.

The letters stated that IBM often is able to improve announced delivery schedules for on-order equipment and that the company wanted all of its customers to be aware of this. The letter went on to explain that the marketing representative receives a new schedule every two weeks which shows both normal delivery schedules and possible improvements.

Schedule Included

A January copy of the delivery schedule was included with most of the letters.

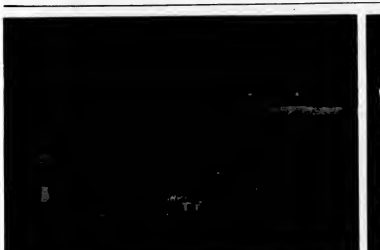
The letters then cautioned that the availability of some of the "on order" equipment would change from one report to another and that, owing to the supply factor, requests would be handled in the sequence that the original orders were entered.

Swift Changes

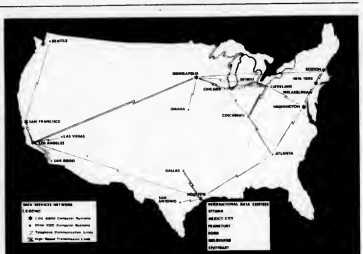
The speed of change of delivery characteristics was underlined at the end of January when IBM announced that Model 2741 communication terminals were available for four-week delivery. The normal delivery of the 2741 had been listed at the beginning of the month as six months for unentered orders and four months for existing orders. The sudden change to an availability of four weeks apparently occurred within the month.

Underlined Problems

In some ways, the IBM campaign underlined the problems involved. It showed that apparently the improved deliveries were available only to people who had already agreed to use IBM equipment. As a result if two prospects needed a 360/30 four months down the line and one was prepared to sign an order with a nine month delivery period while the other was not, then it is quite possible that the person who signed could get delivery in four months while the one who didn't sign would be told again that the delivery period was still nine months.



Among Cybernet's customers are engineers on this man-made island off Long Beach, Calif. Oil well measurements are relayed from a satellite computer in Long Beach to a 6600 in Los Angeles and drilling instructions are relayed back.



The coast-to-coast computer network can be tapped from any part of the country via an in-house terminal.

Control Data Corp. Inaugurates Its National Computer Network

NEW YORK – Control Data's national computer network is in operation, the firm announced last week.

Known as Cybernet, the network links computers in more than 25 cities. Three general classes of computer systems comprise the network: 6600 super computers, 3300 medium-scale computers, and terminal devices.

The heart of the network is the Control Data 6600 computer system, one of the world's fastest and most powerful computers and second only to the Control Data 7600. Located in seven strategic cities, these computer systems use high-speed telephone lines to communicate with other Cybernet Data Centers. An additional 6600 will soon be added in Palo Alto, Calif.

Cybernet's eastern region includes three 6600s, in New York, Boston, and Washington, D.C. The others are in Minneapolis, Houston, and Los Angeles.

Control Data's three New York City data centers illustrate the role played by each class of computers. The 6600, housed at the midtown New York data center, is instantly accessible not only to metropolitan area customers who bring their work directly to the center, but to users throughout the Eastern Seaboard, from Philadelphia to Ottawa, and the rest of the country, who transmit work via Cybernet. The New York center primarily serves customers who have large-scale scientific, sophisticated business or industrial, and general data processing needs.

The Wall Street data center serves the needs of the financial community with a 3300 medium-scale computer. Problems requiring greater computer power can be forwarded to the midtown 6600 or any other super-scale computer for solution. Each of the 3300s in the network plays this dual role – solving problems to which it is suited and serving as a collection and distribution point for jobs requiring larger computers.

A third level of computing power is available at the Lexington Ave. center. Housing a smaller computer, or terminal, this center can perform smaller jobs on the terminal itself or instantly transmit jobs to larger computers in New York or to any other data center in the country. Similar terminal installations are situated throughout the United States, including such locations as Melville, Long Island; Philadelphia; Princeton, N.J.; and Rochester, N.Y.

The terminals use telephone lines with a wide range of data transmission speeds, available as a dedicated service or on a dial-up basis.

A customer may also tap the Cybernet by installing a small, private terminal on his own site to take advantage of benefits offered by super-computers. Such companies as Ingersoll-Rand, Princeton, N.J.; Bell Telephone Laboratories, Murray Hill, N.J.; Cincinnati Milling; and Dayton Power and Light Co. subscribe to this service.

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Conversational PL/I Offered By SBC to Call/360 Users

NEW YORK - Conversational PL/I has been included in the library of languages available through Call/360 from the Service Bureau Corp.

Major Subset of PL/I

The language version included is a major subset of the language, including most of the features with any remote possibility of being used in a time-sharing environment, according to the company.

Full specifications of the subset were not available at press time, but the over-all description included such features as: full commercial/scientific instruction group, procedure (modular)-oriented design, free coding format, block structuring for programs, compile and execution diagnostics, real and complex variables with either fixed or floating point notation, extensive option defaults, string-character facilities, dynamic storage optimization, the usual subroutine library, and the normal group of built-in functions.

No Apparent Limits

There seem to be very few procedures which are not available through the subset. All commercially oriented subroutines and functions are included, the company said.

Monthly Charges

PL/I is available through the normal rental arrangement under Call/360, incorporating a minimum charge of $100 per month. This charge can be any combination of charges for connect time ($11 per hour), data storage ($1.10 per block per month), CPU time ($7 per minute) or service charges and can be derived from either Call/360 Basic or PL/I.

Terminals Supported

The language supports IBM 2741 Data Transmission Terminals and Teletype models 33 and 35. Other terminals can be connected, providing they meet the standard interface requirements for one of the two devices.

Supporting Manuals

The manuals available include *PL/I Subroutine Library* (SH20-2003), *PL/I General Information Manual* (65-2204), *PL/I Reference Manual* (65-2205) and a PL/I Reference Card (65-2206), all of which are available through SBC.

200 Terminals Use One Voice Line

MOORESTOWN, N.J. – Companies that are involved with large-scale use of Teletype-like equipment on low-speed lines may find many savings with a new system developed by the communications division of Ultronics.

The system, called Ultracom, can provide users with the capability of connecting up to 200 devices over a single voice-grade line, eliminating entirely the expense of leased lines, according to the company.

Dial-System Backup

The new system provides the capability of having complete control backup through the normal dial-controlled switching system used by AT&T, the company stated. Should the user's line be disconnected for any reason, the customer can re-establish connection by dialing a special number on the other end of the system.

The system maintains a transmission speed of 2000 bits per second, designed to be compatible with the Bell 201A data set used for the dial network.

Money saved by the Ultracom system is exemplified by 15 West Coast-based teleprinters linked to an East Coast computer which normally requires 15 telegraph lines. With Ultracom, one voice-grade leased line can handle the entire network at savings of about $20,000 per month, the company claims.

Hardware Requirements

The system centers around the use of the Concentrator Base Unit (CBU), a large-scale concentrator unit capable of handling up to 200 devices. An option permits the attachment of up to four high-speed multiplexed lines into a single output line.

Other optional units available permit dial-system backup, device-speed mixing, parity checks, redundant logic (to protect the system from failure), and automatic signal decoding without the need for switching to lower speed adaptors.

The CBU sells from about $8000 to $15,000 in average configurations, and can run up several thousand dollars more for sophisticated setups.

For information, contact: Data Communication Products Division, Ultronic Systems Corp., Mount Laurel Industrial Park, Moorestown, N.J.

New Products

Communications Terminal

A new data communications terminal, DCT-132, can be interfaced with a dial-up switched network or with a dedicated line for remote batch processing.

The unit has an internally stored program and may be upgraded to include card reading, card punching, paper tape reading, paper tape punching, keyboard input and low speed printer output.

In addition to on-line capability, the terminal provides off-line conversion power. The basic unit, with a 300 line-per-minute printer, is priced at approximately $18,500.

Contact Thomas J. Tierney & Assoc., Inc., Mercantile Dallas Bldg., Dallas, for information.

Computer Data Producer

A new system for producing computer-ready data, using a simplified keyboard and dual-tone, multi-frequency signals to transmit the information, has been designed to prepare data ready for computer use at the location where the information originates.

The system automatically produces punch cards, keytapes, or other computer-usable media. The unit consists of three basic elements: an input station, a transmitting unit, and a receiving station. North Electric Co., Electronetics Div., Galion, Ohio 44833.

Minityper Printer

A new high-speed printer, Model 880, is a rack-mounted minityper using solid-state electronics. The printing mechanism, paper feed, and paper supply assemblies are constructed on a front opening drawer chassis.

Shepard Div. of Vogue Instrument Corp., 480 Morris Ave., Summit, N.J. 07901.

Alphabetic Phone Terminal

A new phone terminal, the PT-1240 Spartan, priced under $150, has the full alphabet on a standard 12-button tone phone dial. The unit uses a slip-on coupler fully compatible with regular touch tone systems.

Voice or tone responses from the computer can be heard over the telephone receiver during operation. Power is provided by a standard transistor radio battery and a spare battery is included in the unit.

Metroprocessing Corp. of America, 64 Prospect St., White Plains, N.Y. 10606.

Card Programmer

A new card programmer, Model CP-2, compatible with Wang calculators, makes use of pre-scored IBM tab cards, which can be punched by hand with a pencil or paper clip.

The user performs the desired calculations on his keyboard and writes down the sequence of keystrokes.

Program punch cards may be saved for re-use. Books of proven programs are furnished with each card programmer. Wang Laboratories, Inc., 836 North St., Tewksbury, Mass. 01876.

Channel Doubler

A new general purpose series AM-FS transmitters and receivers has been designed to double the number of tone or data channels that can be transmitted through standard 300 to 3200 Hz voice channels.

The Model 6800 series employs hybrid modulation in frequency division tone supervisory, data transmission, or low-speed telemetry systems.

In addition to standard frequency shift modulation, the units can use a hybrid form of amplitude and frequency shift modulation. Cost per AM-FS channel is $384.

Delivery to customer specifications is 60 to 90 days.

Datel Research Co., P.O. Box 1206, Montrose, Colo. 81401.

Static Card Reader

A new static card reader for IBM punched cards has contacts which sense punched holes mechanically. The unit has a positive mechanical lockout which prevents contacts from closing without the presence of a properly oriented card. Sealectro Corp., 225 Hoyt St., Mamaroneck, N.Y. 10543

We can prove Keytape is more productive than keypunch. And you're still punching cards?

Tell it to me.

You say a Keytape unit can increase my productivity by 30% on the average. Fine. And that my computer can read input up to ten times faster. Because Keytape records data directly on magnetic tape. Instead of punch cards. O.K. You talk about how easy a Keytape unit is to learn and run. All right. You tell me the details. Send me your 40 page description manual right away.

Name_____
Company_____
Strast_____
City_____ State_____ Zip_____

Send to Honeywell Communications and Data Products Division, Wellesley Hills, Mass. 02181.

The Other Computer Company:

Honeywell

Sell it to me.

Sure. You've sold me on what a great idea Keytape is. Now's your chance to sell me a Keytape unit.

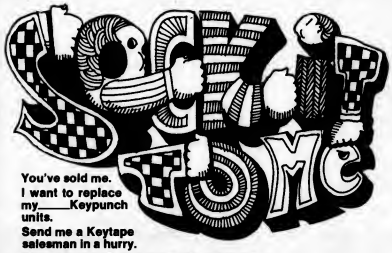
Send me your 40 page description manual and tell me where I can see a demonstration.

Name_____
Company_____
Street_____
City_____
State_____ Zip_____

Send to Honeywell Communications and Data Products Division, Wellesley Hills, Mass. 02181.

The Other Computer Company:

Honeywell



You've sold me. I want to replace my_____Keypunch units. Send me a Keytape salesman in a hurry. Sock it to me. Sock it to me. Sock it to me.

Name_____
Company_____
Street_____
City_____ State_____ Zip_____

Send to Honeywell Communications and Data Products Division, Wellesley Hills, Mass. 02181.

The Other Computer Company:

Honeywell

Editorial

Let's Press
The Restart Button

The sudden death of the ACM's Special Interest Committee on the Social Implications of Computing (SICSIC) cannot pass unnoticed. It is perhaps unavoidable that most of the practitioners of a technology are unable to find time to seriously ponder where the technology is going. It is even possible that some of the obvious implications are sufficiently unwelcome to many who can see them, and that they feel the whole subject is too dangerous to touch. But for a major society, like the ACM, to admit defeat and simply abolish its only committee dealing with the subject is nothing less than a voluntary abdication from any pretense at having true professional status – or caring about attaining it.

Luckily there is a bright side to this matter. The death of the committee will, we hope, come as a shock to enough members of the society that its reinstatement will follow. So far no member of the ACM has come forward and expressed interest in the group, but perhaps now that the wages of disinterest are known there will be some support.

We hope so, for everyone's sake.

With support, ACM will be able to press the restart button, and we will be able to announce the rebirth of SICSIC.

A Question Answered?

Recently one of our readers complained about a newspaper headline which talked about a "berserk computer." How, he wanted to know, could such a misleading heading occur – particularly when the story made no allegations about the computer hardware failing at all?

The answer to his question is simple. The wire service which picked up the story in Washington used the expression "berserk computer" in its story and the deskman on the newspaper simply picked up the expression for his headline. The wires have proved themselves reliable, as can be seen by their years of commercially successful history.

So that is the answer. It's a complete answer to the question. But somehow we feel that it won't satisfy our reader – *anymore than the claim that "the hardware didn't fail – so you can't blame the computer" will satisfy the public when computer-centered systems do not provide satisfactory results.*

A Worthwhile Guideline

The possibility that credit bureaus will change their current rules and allow members of the public to have access to their own files is a welcome one to the computer field. Inevitably, the increasing awareness of the problems of credit ratings has drawn public attention to the bureaus – and to the equipment the bureaus use to handle their operations. At the moment the situation is so confused in the public's mind that often the computer takes the blame for the policy of the bureaus.

We trust that the guidelines currently under discussion by the bureaus are quickly approved – and that, in the future, changes are made as necessary to keep them up to date and computers out of disrepute.

"Wait, I found the key to the other door"

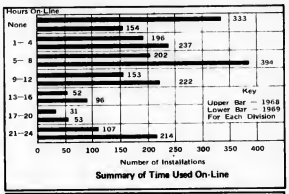
CW Survey

350% Growth for Terminals by 1972

By Arnold Wick
CW Research Staff

A 350% growth by 1972 in data communications terminals in on-line applications is indicated by the results of a recent *Computerworld* survey of more than 8000 data processing people.

Of the 2500 responses, 71% indicated that they either had installed or intended to install communications equipment. Major growth areas were the use of CRT devices, with IBM 2260s showing the biggest growth.



Summary of Time Used On-Line

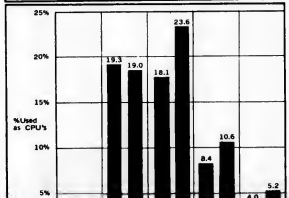
Majority Planned to Use IBM Computers

The most popular central computers were the IBM 360 series, representing 67.4% this year and 73% as of 1970. The five most popular models were the 30, 40, 50, 65, and 20, in order of current popularity.

When asked the number of hours spent running on-line, users responded as shown in the graph. The shift over one year indicated that the majority of users would be running one to 12 hours per day by the end of 1969.

Among the terminals chosen, the IBM 1050 was definitely the leader. Currently more than 60,000 terminals are in use, with 110,000 projected for the end of this year and over 200,000 for 1972.

Greatest growth seemed to center in the area of the IBM 2260 (CRT), with expectations for over 14,000 of these units by 1972 (an increase of about 400%).



Summary of CPU Selections

Criteria for Terminals

Asked for the criteria used to evaluate terminals, the majority of the respondents indicated the cost, performance/reliability, service, and vendor reputation were the major ones. Performance/reliability was most frequently chosen as first, followed by cost, service, and reputation.

The largest area in which on-line terminals were applied was inquiry, followed by inventory control and savings. Order processing was first among off-line applications, followed by payroll and inventory control.

In planning future applications, CRT units were the most popular terminal device for several applications, including inquiry and order processing. Cost was the major factor in slowing down the new implementations, according to 36.7% of those responding.

A fairly small percentage was interested in hard copy as a requirement (about 20%), but many were interested in having this capability as an option.

Current Costs

It was found that, currently

(Continued on Page 9)

Ferguson Talks Hardware to Gain Software Patent

One of the main questions about software patents has been whether hardware companies could routinely get patents which covered software. Clearly, if this were so, they would have a competitive advantage over software companies which might have the same idea but, by presenting their inventions as purely a software embodiment, would be barred from obtaining patents.

A number of possible cases have been cited, including a garment manufacturing patent awarded to IBM and the Hamburgen patent described in *Computerworld* last summer. But no one came along and said out loud that his "hardware" patent was a software patent – until last week.

David Ferguson was awarded patent 3,422,404 on Jan. 14. It had been filed in February, 1966. His basic idea was simple: the operation codes in a normal program fall into definite groups depending upon the type of operation being carried out; therefore, it is possible to use specific codes for different operations, provided that one knows which group is currently being executed. This allows more efficient use of the available codes.

The advantage is that one can get a larger number of operation codes without using any extra hardware. Ferguson in his application laid emphasis on the fact that no extra or additional hardware was needed. But at the same time he described the "embodiment" of his idea in hardware terms. He talked of "and gates," "output lines," "flip-flops," etc., and showed a diagram that was hardware oriented. The examiner presumably did not notice that Ferguson had already stated that hardware was not required. If he had, and had asked questions, he might have found out that the idea was first used in the SDS interpretive language – a computer program – for which Ferguson was responsible. Then he would have seen that the instruction operation code "zero" was minus in Mode 1 but plus in Modes 2 and 3. Operation code 3 is "clear" in Modes 1 and 2, and "test operand to be less than" in Mode 3. In point of fact, the software had been the origin of the invention!

Of course, the fact that an inventor uses a particular example of hardware in applying for a patent does not prevent him from applying his idea to others' hardware. Ferguson, now that he has safely got his patent, makes no bones about the situation. "It is a software patent," he said. "And we will vigorously prosecute anyone who uses this technique in a program without our consent."

So now we have an actual case to consider. It is a case in which a software program existed, was then described as a hardware embodiment, and was granted a patent. The question is: does this patent cover a program?

If it does, then apparently the idea that the hardware companies have been able to exploit the patent law to give themselves a competitive advantage over the purely software companies is well founded.

It will be interesting to see, now that we have a fairly clear case.

But even if the patent does not cover the program, then almost equally interesting is the apparent result that an idea which came originally from a software technique has now resulted in a patent, so that Ferguson can claim royalties from any hardware manufacturer who utilizes the system. This suggests that software experts may be able to protect their inventions so that at least hardware manufacturers cannot copy them.

And that, also, would be interesting!

1. Command Types

1.1 Special Mode 1 Commands

S Subcommand
F Flags

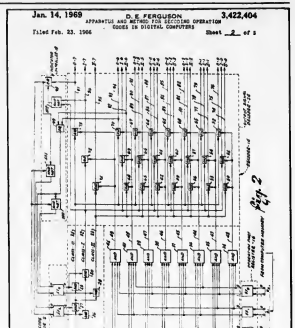
F=7 subcommands 0 (LEAVE) and 1 (EXEC), the F field is not interpreted in all other special mode 1 commands causes the F field to be interpreted as a relocator (bit = 1) in any of six flags. These flags may be set, reset, or tested (as determined by S).

1 2 Regular Commands

C Command
M Address mode
A Address increment

The command causes the function to be performed as described in the next section, and also determines the mode in which the next command is to be interpreted. The address increment represents a literal or a relative table position. The address mode determines the interpretation of A.

An excerpt from the SDS 92 Interpretive Language manual, dated 1965, illustrates the multiple use of operation codes.



This diagram submitted with the patent application is actually a software flowchart redrawn in hardware schematic style.

350% Growth in Terminals Is Seen

(Continued from Page 8)

30% of data communication terminal users are spending less than $1000 per month for terminal equipment, but by the end of 1970 this same category will decrease to less than 14%. While approximately 6% is now spending over $10,000 per month for terminals, within two years more than 20% expects to be in this category.

The overall conclusion based on this study indicates that expenditures for data communications terminal equipment will probably triple within the next two years.

Scope of CDP Exam Broadened

CHICAGO – The examination for the Certificate in Data Processing, given by the Data Processing Management Association since 1962, has been expanded to meet the growing needs of the data processing community.

The two major areas of change, to take effect with the 1970 examination, are:

- Addition of a fifth test category – Management – to the four existing general areas of knowledge covered by the examination.
- Broadening of the test in the four areas of knowledge presently covered by the examination.

The revised CDP Examination will cover the following five general areas:

1. Automatic data processing equipment.
2. Computer programming and software systems.
3. Management: data processing management and general management skills.
4. Quantitative methods: accounting, mathematics, and statistics.
5. Systems: data processing systems and administrative systems.

The revised examination will be administered as in the past. Currently the examination is conducted at approximately 100 test sites, usually college or university locations in the United States and Canada. However, international interest has grown steadily. While final arrangements have not been completed, chances are good that the examination will be offered in the Philippines for the first time this year.

Europe Next?

Serious interest also has developed in Europe. Although the latter developed too late for consideration in the 1969 examination, there is every indication that a European site can be included for the expanded 1970 examination

Scoring and analysis of the examination is performed by an independent testing and research organization, Measurement Research Center, associated with the University of Iowa. The San Diego State College Foundation, associated with the CDP Program from the beginning, will develop the analysis and evaluation of the results. For the present, the qualifications of CDP candidates have not been changed.

Several important changes pertaining to the criteria for successfully completing the CDP Examination also have been approved by the certification council. Beginning with the 1970 examination, all candidates must successfully complete the five sections of the CDP Examination to receive the certificate. A candidate will be required to take all five sections the first time he sits for the examination. This provision applies to all candidates, including those who have previously taken the examination.

Study Guide Revised

Revision of the CDP Study Guide covering the expanded 1970 examination is underway. Every effort will be made to make the publication available in early spring to provide all necessary information to prospective candidates, the council said.

The certification council has invited all CDP holders to contribute their knowledge to the expansion of the CDP program.

All CDP holders will receive a letter from DPMA International Headquarters requesting that questions for possible inclusion in the expanded CDP Examination be submitted for consideration. Guidelines and appropriate forms will accompany this letter.

Market Research Course Started By Association

NEW YORK – A course in computer applications for market research has been started by the New York Chapter of the American Marketing Association's Institute for Advanced Marketing Studies.

Stanley Cohen, manager of marketing science for Computer Applications, Inc., is the instructor for the course being held from 5:30–7:30 p.m. on Tuesdays from Feb. 11 to April 8.

The survey course will cover the important features of the state-of-the-art of the computer as applied to marketing research problems. Topics will include: an insight into programming languages; data processing aspects of marketing research studies; use of statistical programs and statistical systems (nontechnical); text editing systems; simulation; optimization and information retrieval; and an overview of lime-sharing and real-time computer systems.

Participation is limited to 30 people. Enrollment will be in order of receipt of application. Cost is $50. The seminar is being held at the City University, Graduate Division.

Information Group Calls Meeting

PHILADELPHIA – The new Information Industry Association will hold its first national meeting in New York City, March 20-21.

The association was organized late in 1968 to represent commercial firms involved in either the development or application, for profit, of advanced data processing and communications technology for the purpose of providing an information service.

Registration fees for the meeting are $60 for nonmembers and $50 for members.

Information about the IIA national meeting may be obtained by writing to Paul Zurkowski, executive secretary, Information Industry Association, 1025 15th St., N.W., Washington, D.C. 20005.

Sawner Studies On-Line

IBM Uses CAI To Train CEs

ROCHESTER, N.Y. – Dennis Sawner sat down at a terminal here this month and completed the 100,000th hour of study to be accomplished on a coast-to-coast computer-based instruction system that has been used by more than 2000 IBM employees since last fall.

Sawner, a customer engineer in IBM's Field Engineering Division, is one of some 650 division employees who use the system each week.

The Field Instruction System network, put into operation by the Field Engineering Division last fall, includes 200 IBM 2740 terminals connected by phone lines to a 360/50 in Poughkeepsie. Terminals are located in all field engineering branch offices in every state except Alaska and Hawaii.

Stored in the computer are 35 work-related courses. All are designed to help keep customer engineers current in their rapidly changing technological field.

The students can save considerable time by taking courses at scheduled periods right in their branch offices. The system enables them to reduce the amount of time they normally spend traveling and attending classes at centrally located division education centers.

The computer-assisted instruction courses are designed to supplement education activities at the division's education centers throughout the nation.

Regional Computer Serves 58 Schools

DES MOINES, Iowa – Project Access is bringing the power of a computer to 58 elementary and secondary school districts in nine Iowa counties.

Access – Area Cooperative Computer Educational Systems Services – utilizes an IBM 360/30 at 112 Eleventh St. here to process data for schools in Boone, Dallas, Guthrie, Jasper, Madison, Marion, Polk, Story, and Warren counties – with a total public school enrollment of more than 115,000 and a private and parochial school enrollment of nearly 10,000.

Project Director K.W. Miller said the service puts electronic data processing within the reach of any school in the state.

"We believe that a regional computer center such as ours is the best solution, Project Access makes data processing facilities available to schools as needed and at a price they can afford."

Schools in the nine-county area can take advantage of as many as five services – class scheduling, grade and attendance reporting, test scoring, payroll accounting, and student census. Each participating school, the closest one a few blocks away and the farthest an hour's drive, compiles basic information and delivers it to the computer center where it is processed and returned to the school within a few hours.

Time Saved

"We estimate that each teacher has gained an extra week's instruction time per year since the computer began handling the class scheduling function," he said.

The computer, in concert with an IBM 1230 test-scoring machine, also is being used to free teachers from grading multiple-choice or true-false type examinations – tests of their own making or standardized tests.

As the 1230 scores the tests, the results are automatically punched into cards and fed into the computer. The computer prints out detailed reports showing: (1) an item-by-item analysis on each question and (2) a percentile rank of students.

In addition to administrative work, Polk County uses the computer as an educational tool. Students from the five Des Moines high schools have joined computer clubs. They learn Fortran programming, and then on Saturday have scheduled time to run their programs on the computer. Students enrolled in courses at Des Moines Tech to train programmers have the added advantage of the availability of a 1050 terminal and accompanying card reader for transmitting, compiling, and testing their own programs over telephone lines to the computer.

"We want to make our students aware of the computer's tremendous potential and the career opportunities that exist in data processing," Miller said.

Institute Gets Its First President

DALLAS – David F. Allison has been named president of University Computing's Institute for Professional Education.

Allison, formerly director of advertising for another UCC division, previously headed seminar and education operations for Brandon Applied Systems, New York, and for C-E-I-R's Institute for Advanced Technology, Washington, D.C.

Institute operations will encompass educational activities formerly undertaken by UCC's Professional Seminar Division and will explore new areas of computer-related education, UCC said.

COMPUTERWORLD

COMPUTER ENVIRONMENT SUPPLEMENT

February 19, 1969 Supplement/Page 1

Yes-even a lunch counter can be involved. See Page 3

Computer Environment Is Important To You

Anyone who has had the fortune to work in a well designed computer room can talk quite feelingly about it, particularly if he has had the misfortune to then move to a less well planned installation.

Unfortunately, actual production figures do not always show the problem clearly. Primarily, this is due to the many elements involved in the operation of a computer, and when production is lower than it might be — or costs are higher — the problem is not always obvious.

There are rarely other installations so parallel in operation that their work load can be fairly compared. Even if there are such comparable installations, observed differences are liable to be put down to the comparative skills of data processing managers, or to the software always anything rather than to the planning of the site.

After all, that happened long ago and there is nothing that can be done about it now. Managers soon learn that crying over bad initial planning is wasted.

The Manager's Role

This, of course, is exactly why planning is important. The decisions which are all important will soon be out of sight and out of mind, but their effect will still be felt.

The good data processing manager will realize that one of the biggest contributions he can make during the planning phase of a computer installation is to really get into the details, and see that full attention is paid to every phase of the coming operation. It may not seem as important as helping with the preparation of programs but it can be just as rewarding, and longer lasting. It can last right through the life of the computer room. Few programs last that long.

Manufacturer's Guidelines

The manufacturer will provide a series of deadlines which have to be met before the machine arrives. These are very helpful, but a close look at them reminds one that the computer room is the CUSTOMER's responsibility — NOT the manufacturer's.

The guidelines define what the customer is responsible for handling. They are carefully worded to ensure that the computer has everything it needs to work, but whether or not the installation makes the most of its computer as a working center is the responsibility and opportunity of the installation's manager.

In the following pages a few of the points involved are discussed. Make your computer room an effective one It's well worth it!

The Basic Understanding of Planning Saves Confusion

One of the most common failures in computer room planning comes from not realizing that there are a number of different stages in the planning itself and that each step has its own particular problems, profits, and techniques. The penalty for confusing these steps can be seen, for instance, when a site is carefully selected based on the superb work flow characteristics inside the room. Only later does it become apparent that the room itself is geographically inconvenient. This comes from confusing the Site Selection phase with the Room Planning phase.

Work flow studies have great importance during room planning, but little importance during site selection. Almost any site can, with enough care, be organized for good work flow characteristics; and a site decision based on irrelevant "virtues" might just as well be made with a pair of dice!

It is worthwhile knowing what the main phases are. Needless to say, no one agrees exactly, and there is a lot of overlapping. But there are basically three phases Site Selection, Room Planning, and Testing. These are discussed below and on the following pages.

Well Chosen Site Should Handle Double Workload

Site selection is the first phase of planning for any computer. It often takes place after the computer has been selected, but surprisingly this is not actually necessary. The advantage in waiting is that the site can be planned around the specific hardware which is on order, and the disadvantage is exactly the same! A computer room should be selected to last for a period of five to ten years, and during that time it will be asked to accommodate many still unknown types of equipment. Guessing about the first set of equipment to arrive is in many ways a good indicator as to how the future situation may develop.

In the worst possible case, where a site is chosen first that will not accommodate the selected computer, that site selection should be washed out *even if you are prepared to choose some other computer.* It just has not got the expansion capabilities needed for future growth.

Expansion capability is one of the major points in Site Selection. A well-chosen site should be able to handle twice as much equipment, twice the programming staff, and twice the work load at the very least. This can, of course, be done on a contingency basis. Other departments who need nothing more than telephones, desks, and files to keep them productive can use the site in the meantime. Parts of it can be partitioned off, and even rented out on a month-to-month basis to help balance the budget.

Location and Parameters

Location is, after expansion capability, the most important characteristic of the site. It is something which is absolute. A location is a location is a location. So pay full attention to the problem while you have the chance.

The virtues you want to find in the location are: Price, Prestige, Work Convenience, and Security. *Only you can fully evaluate these items.* If it helps your firm get new business, or helps you get programmers, then that expensive downtown site is worth it. (But be sure to include the cost involved in isolating your electrical and air conditioning equipment from the rest of the building even though you are paying for the building's services.) If your installation is likely to have frequent visitors see that appropriate inner and outer reception areas are provided. If you need to be next to the keypunch room think of taking the keypunch room with you to your new location. They may look impressive, many such rooms do) but in fact it is not impossible to move them if you have a good reason, and if you see that their facilities are improved and kept on a line with your own.

Normally, that is about all there is to site location. Just Expansion Capability and Location. Check these out carefully, noting the virtues and vices of possible sites, and you will soon find that the difference between various sites is clearly delineated.

Then go ahead and choose. It will probably be a good choice.

Room Planning

Once the site has been selected there is the planning of room itself. Let us say at once that this is no job for an amateur. This is definitely a job where a consultant is well worth his fees. Site selection can often be done better by the people on the job, as many of the decisions are so overlaid with intangibles that a consultant cannot always be apprised of. But that is not so in room planning. Here requirements can be clearly supplied to a consultant.

Critical Time Problems

Almost equally to the point is the fact that a consultant will have time to continue the job WHEN EVERYONE

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Consultant Best Bet For Room Planning

(continued from page 1)

ELSE IS HEAD OVER HEELS IN OTHER THINGS. When the computer is coming in there is an enormous load of work placed on the firm's management staff. New procedures to be explained, courses to be taken, people to recruit, train, and get to work. Presentations to make – anything and everything. It is one time of *guaranteed* overload and having to check out the success of the room plan would simply be a further overload. An overload that can be avoided together with an unsatisfactory computer room.

By contrast, a consultant will still be around, and be largely unaffected by the pressures. He can take time to check, to alter, to notice changes, and to turn plans into reality.

Your Role

But the fact that you may (or may not) employ a consultant does not mean that you can now ignore the process. The consultant can recommend but you have to live with it, and pay for it. So you should understand what the qualities are that he is aiming for, and what he hopes to get out of it. Then you will be able to make sure that you are getting the best value and properly using the room. It is no use to install expensive drapes over outside windows as part of the sound deadening equipment if everybody thinks that they are simply for decoration and keeps them pulled back so they can look out at the harbor. It is no good providing a clear space to allow the air currents to work if no one realizes it and puts a reserve disk pack cabinet in the way because there wasn't room for it elsewhere.

Prepare a List

You still have a major role – to understand what the various objectives and compromises are, and to make a list of what means are used to achieve them. If possible, have the consultant list criteria by which the final results can be tested at a later date to determine the degree of success achieved. That list should be created first, and used as long as the computer room is functioning.

With this in mind, here is a description of some major tools in computer room planning. You will know most of them, but a list does no harm.

Beware Of These Dangers

Protection of Tape Files

A storage unit, the Data Bank Safe, has successfully met the Underwriters' Laboratories' four-hour testing standard for electronic data processing media safes.

During the test, the safe is subjected to temperatures reaching 2000 degrees F. in four hours. The temperature inside the safe may not exceed 150 degrees F. at any time during heating or cooling, and relative humidity may not exceed 85%. Temperature and humidity above these points could result in loss of information or read-out errors because magnetic computer media is highly susceptible to both heat and moisture.

Prior to the recent establishment of the four-hour standard, a two-hour test, in which outside temperatures reached 1850 degrees F. in two hours, was the highest rating accorded an EDP media safe.

Testing:

Where Manager Shows His Worth

At last the great day arrives and the computer is installed and the programs start to run. The tape racks fill up, the operators start to know their routines, the servicemen no longer seem to live-in, and a pattern starts to form.

This is what all the work has been for. And it will be very impressive. The Chairman of the Board will drop in and boast about it to his luncheon guests. They will all be impressed by the cleanliness of the room, and of the equipment. They will undoubtedly compliment you on the work – even if they are turning up their coat collars to guard against the cold draught coming from the air conditioning equipment which is simply not behaving as it should. Unfortunately, these compliments will be of no real help in evaluating the success of the installation.

A Manager's Opportunity

Now is the time for a manager to show his worth. It will take time, and quiet observation, but it will be worth it. It is quite unlikely that everything has goon according to plan. Work volumes and patterns may be different; new requirements may have created a shortage of space in the programming areas so that programmers are finding it pleasant to come into the computer room more often and stay longer; the electricity supply may suddenly develop some weird characteristic at 7:30 a.m. (It hasn't really changed at all but no one ever thought of checking the cycle fluctuations throughout a full day period and you are now running three shifts).

Using Your List

Now is the time to use that list of objectives that should have been prepared during the room planning phase. If you did not make such a list, write one up now. Then go into a quiet corner of the computer room, take a spare desk and stay there. For hour, after hour, after hour until no one notices that you are there.

Study Machine Logs

Take the machine logs with you and spend some time checking them out. Note if any particular piece of the equipment is giving more trouble than others. If it is, check to see if there is any particular time of the day when it occurs. Then go and measure the air characteristics around that unit and compare them with the requirements in the manual. IF THEY DIFFER CALL THE ENGINEERS BACK. Don't just leave it.

But remember that other items may cause poor up-time on particular equipment. For instance, your serviceman may simply not be an expert with that piece of equipment, although he knows the rest of the installation backwards – so check with other users.

Note the work flow. See if the tapes and disks are accumulating on the top of equipment or are being put back. See if the printer output is unnecessarily stacking up. Check to see if the operator's log is being completed as neatly on the night shift as on the day shift.

Outside the Computer Room

Go outside the computer room and look for problems involved in the movement of work to and from the system. Remember that program debugging is one of the major tasks and see if this is being handled smoothly. Check on the noise level, the temperature, the traffic patterns, and anything else you feel appropriate.

Then you can go back into your own office and start dealing with the problem areas. You have now completed half the job of Initial testing.

After all this you may well feel that you have actually completed the job but that is not the case. You have looked for visible symptoms and found them. But they only tell you the story of what is happening and give no indication of what might still happen.

Looking Ahead

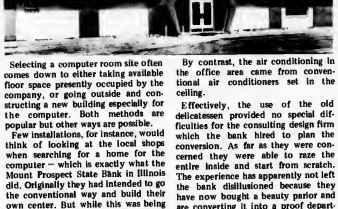
The list of what might happen is long – and important. There could be a fire in the computer room itself, or in an office downstairs. There may be smoke from a nearby fire, or water from a fireman's hose, or a malfunctioning sprinkler system. An attempt might be made to obtain unauthorized access to the records on the computer; or the records and programs could be damaged. All these eventualities must be taken into account. They form the second half of the testing.

Again, a list is suggested and is worth creating. Checking is fairly simple. Note whether systems have been created to handle these potential problems, and if there is anything that could interfere with their operation. One installation carefully guarded the front entrance to the tape library but habitually left the emergency exit open so that the operators could go out for a cigarette. Later the firm wished they had provided a smoking room!

Profit is Performance

These then are the three parts of the process: Site Selection, Room Planning, and Testing. If you keep them separate you won't go far wrong and if you work at them you will be able to substantially increase the performance of YOUR system. And that's the name of the game.

After The Lunches Came The Computer



Selecting a computer room site often comes down to either taking available floor space presently occupied by the company, or going outside and constructing a new building especially for the computer. Both methods are popular but other ways are possible.

Few installations, for instance, would think of looking at the local shops when searching for a home for the computer – which is exactly what the Mount Prospect State Bank in Illinois did. Originally they had intended to go the conventional way and build their own center. But while this was being planned a family delicatessen just a block away from the bank closed down and someone saw the opportunity to convert the building to a completely new use.

Floor Divided

The computer system on order was a Burroughs B-300, which is a fairly small system, so the size of the building (some 2000 square feet) was quite adequate for both the computer room (830 square feet) and for the computer staff general offices. In preparing the area for its new uses these two parts were treated almost as independent units each with its own independent electrical and air conditioning services.

The key to the computer room organization was flooring. The bank decided to install raised flooring where each panel is supported independently.

Primarily, this was to provide for easy handling of cables between the various units of the Burroughs system itself, but the air conditioning also took advantage of the design.

The underfoot space was used to direct the freshly cooled and cleansed air to all parts of the system. A 10-ton air conditioner was used, and air was drawn from the top of the unit, cleaned, humidified or dehumidified as necessary and discharged below the raised floor. Special grille panels were installed to direct the flow to the areas where it was particularly needed.

By contrast, the air conditioning in the office area came from conventional air conditioners set in the ceiling.

Effectively, the use of the old delicatessen provided no special difficulties for the consulting design firm which the bank hired to plan the conversion. As far as they were concerned they were able to raze the entire inside and start from scratch. The experience has apparently not left the bank disillusioned because they have now bought a beauty parlor and are converting it into a proof department.

The Personal Role Of DP Managers

And Don't Forget To Take A Trip!

The personal role of the data processing manager during the selection and preparation stages for a new computer room depends in great measure upon the manager himself. He is, in some ways, duplicating the efforts of others. If a computer has been ordered *somewhere* will find a site for it. *Someone* will arrange the equipment. *Someone* will select the power supplies. There will be a computer center, even if the computer salesman has to get down on the floor and mark out the ducts himself.

It is quite conceivable, of course, that a center planned in this way would face enormous remodeling bills and never be really efficient.

Aim For Proper Performance

The advantage of realizing what the manager's role is *Not* is in defining what his role *Is*. If he is not responsible for bringing the center into existence, he is responsible for the center's performance.

This is an important distinction because it shows that the DP manager has a genuine role in the operation. The cold facts are that the arrangements for the center will seriously effect the performance of his department; and that wrong decisions made in the planning stages will be expensive and sometimes impossible to correct at a later date. The manager is going to be held responsible for his department's performance so he must play an important role in the center's planning.

Now Or Never

This may sound obvious, but it is important and should not be overlooked. Departmental heads are generally given only a limited voice in the detailed planning of their facilities. They have to make sure that there will be enough room for their staff, but after that the balance of the decisions can be made on a higher level with few possible ramifications. And, should some aspect of the operation not be satisfactory upon completion, it is not the responsibility of the departmental head. However, the data processing manager cannot expect to win points after site completion or to be relieved of the responsibility for ineffective operation of the facility. He must make his needs clearly known at the very outset.

How To Do It

Having defined his goal as building the most effective physical plant possible, the manager should consider his sub-goals. Clearly, he is not going to get on his hands and knees to draw lines for cable passages. In fact, he is going to do very little himself. The experts are going to do the job, and the manager is going to see that the experts do that job according to his specifications.

Two Tasks

This means that the DP manager has two major tasks: first to discover what is correct for his department, and second, to communicate this to the experts and consultants for incorporation into their designs. Communication is the key word here. Anything that is not effectively communicated is lost and the time spent on research is wasted.

One way to avoid wasting time is to make sure that your data can be communicated. Other time-saving techniques involve travel and models.

Check Other Installations

Familiarize yourself with equivalent computer operations. One of the best possible ways to explain to your consultants and contractors is to be able to show them what you want from an existing installation. So, as a first measure you should become familiar with the centers in your area, at least with those centers that have operations along the same lines as yours.

A good way to start is at your local Data Processing Management Association meetings (join if you have to—it's a good investment). A few inquiries at DPMA meetings will produce the necessary introductions. If you have a particularly unusual installation you may have to look further and will want to check into User Groups and other professional associations for these introductions.

Ask About Problems

When you look around an installation ask the manager what the one thing is that he would like to have changed. Don't be embarrassed about asking—everyone has at least one problem area. Ask him how he knows that this feature is bad, how much (in dollars and time) it would save him each month if it was corrected.

As you go on you will begin to realize just what particular problems your installation is facing.

After you have checked into other installations make yourself a list of problems that have been identified. Against each problem area you can put examples of failure costs and methods of solving the problem. Also include the name of the installation with these problems to help demonstrate your point.

You should plan to do a lot of visiting, and not be concerned about the amount of company time used for these visits. A look at some facts will make you realize how important that can be to your company.

If your computer department is going to cost you, say $10,000 a month for five years you are talking about more than a half-million dollars. If ten working days (covering 20 visits) can help increase the usefulness of that half-million investment by even two or three percent, your investment of time has been well made. Work out your own figures. Often the return can be closer to ten percent than two percent.

Develop Your Own Model

Remembering that you have to communicate as well as appreciate the facts involved you should go ahead and set up your own model of the planned installation. Do not rely on using someone else's model—you may want to develop it to show some particular problem areas with which only your installation will be faced.

Models can be made from a variety of materials. If nothing else is available, use paper cut-outs that can be moved on graph paper. Three-dimensional models are expensive but worth it in the long run.

Making the model can be an evening pastime—if you like that sort of thing—or you can assign a member of your staff to the job. Don't make it too complicated or permanent as there will be alterations made from time to time. A model will add considerably to communication efforts.

Summary

To summarize, the data processing manager's role in the preparation of a computer room is:

- To improve the efficiency of his department in years to come.
- Locating possible problem areas, and examples of their cost.
- Locating apparent solutions for discussion.
- Clearly communicating (preferably with models) both problems and solutions to the men who will have to handle the details.

Preparation Schedule For Typical Site

One major supplier offers the following typical site preparation schedule:

60 days before delivery:

- Verify site dimensions and building access dimensions.
- Insure that the proposed floor loading agrees with the building specifications and applicable city ordinances.
- Ascertain the location and type of primary power source (in-plant diesel generator, public utility, etc.) and the length of power runs.
- Determine the need, if any, for additional electrical power and arrange for its installation.
- Determine voltage fluctuations at the power service entrance over a sufficient period of time.
- Determine the need for additional air conditioning and arrange for its installation.
- Order power panels and raised flooring (or surface metal raceway).
- Establish a plan to vacate the selected area prior to site preparation.
- Arrange for insurance.

30 days before delivery:

- Install primary power equipment.
- Install wiring.
- Install air conditioning.
- Install floor.

7 days before delivery:

- Complete the computer room decor, including painting.
- Clean the computer room thoroughly.

Conferences Give Place To Computer

BALTIMORE – When the Read Drug Co. decided to automate its accounting procedures, it called in an experienced data processing consultant to direct the choice of equipment, the best systems approach, and the design of the facilities. He decided that a Honeywell H-1200 would best fit the company's needs.

A conference room was chosen for the computer center because it was the right size and had the capacity for expansion. The computer consultant wanted the conversion done by one manufacturer only. An aluminum company agreed to take full responsibility for the job and to work closely with the computer manufacturer to reach the exact specifications for the computer.

Layout

A raised flooring was installed, consisting of 2' x 2' modular panels supported on all sides by a grid of pedestal-supported stringers fastened to the pedestal cap. The floor is capable of sustaining a uniform load of 250 psf or a concentrated load of 1000 pounds. Grille panels provide the proper air flow to the equipment and the interchangeable feature allows for rearranging the equipment when necessary.

The wall partitions are of modular design to give a choice of panel arrangements and flexibility for expansion into the office space.

The air conditioning unit is designed to operate with raised flooring, using the underfloor space as a plenum to direct the air to the computers. Air is drawn in through the top of the unit, cleaned, humidified or dehumidified, and cooled or tempered as needed.

Power and the Computer

Computers use remarkably little power. The currents required to differentiate one digit from another — which is all that is really needed — can be any size that the designer chooses. And naturally he chooses to keep them small. It can be reasonably said that the moon trajectory can be computed with less power than needed in a kitchen range.

Power Supplies Important

As a result, it is often thought that power supplies are not important for computers, or at the very least that they are routine and can be handled by the local tradesman at the last moment.

This might have been true in the past. Ten years ago, when the great thing was to be able to get the job done at all, power supply could be handled in an off-handed manner and the responsibility for the power could reasonably be delegated to junior people. They could not make too much of a mess of it, and it could not take very long to get things right.

However, this was ten years ago. Now we expect our computers to work, and we rely on their working. It is also important that power supplies not only keep the system operating under optimum conditions but also under marginal and bad circumstances. The overall effect of strong, well constructed power supplies can best be shown in the up-time figures — or more dramatically in the down-time figures.

Electrical Environment

As well as the increasing requirement for stronger power supply design which has emerged during the past ten years due to the needs of computer users, an equivalent change has occurred in the electrical environment of our cities. We are using more and more electrical and electronic equipment and we are putting our computers nearer and nearer to other equipment.

Even in the steel and glass skyscrapers that are going up all over the country, no one can tell what the power utilization pattern is going to be under the plush carpets of the reception office. A maintenance welding plant, an electronic laboratory, or a commercial printing plant may all be found in these buildings, and all must be considered in the overall picture.

Power Strain

Moreover, the increasing use of power has strained electrical services to near and beyond the breaking point in many parts of the country. No one needs to be reminded of the great Northeastern Coast blackout of 1967. The blackout itself was not dangerous, but it was a very visible symptom of strain on existing electric supply systems.

Good Design Needed

Because of the increasing need for the computer to have strong, well designed power supplies, and the increasingly hostile electrical environment which exists in our major metropolitan areas, it has become clear that these power supply systems require professional planning, designing, and construction.

William C. Norris, Chairman of Control Data Corp., recently said that the provision of equipment, such as power supplies, had in the past been greatly overlooked and that his corporation believed that a lot of its success was based on careful attention to these items.

Voltage Regulator

In New York a state-owned computer installation solved many of its down-time problems by using a good voltage regulator. Computer manufacturers are more often than not asking users to provide their own power systems through an outside contractor. This means, of course, that power planning and installation is going to be expensive, but will be worthwhile. You cannot expect to get immediate returns on your investment, but you can expect it to show up over the years in the form of reliable operation and improved up-time.

The User & The Power Supplies

The normal power requirement for computers is a 120/208 volt, three-phase, four-wire power supply, plus ground equipment. The supplier will usually specify voltage regulation for the system.

Because the voltage requirements specified by the computer supplier and those specified by the public utilities generally differ, provision should be made for installing voltage regulation units compatible with the computer elements.

Manufacturers of power supplies provide high voltage power supplies for use in applications requiring highly stable, regulated, and low noise power. Some units have integrated circuits and short circuit protection built in to prevent a short on the output from destroying the supply. A new unit is a prewired console which combines main circuit breaker, transformer, voltage regulator, and distribution panel.

The computer user usually furnishes electrical outlets for the major units of the computer system, but is not required to furnish DC distribution which is furnished by the supplier, except in large-scale installations.

Sabotage Is Possible In Computer Systems

A growing hazard in electronic data processing operations is sabotage. What are the safeguards?

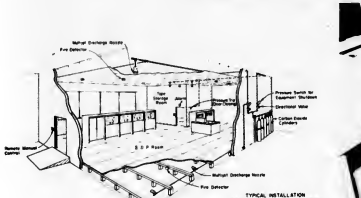
- Control access to the EDP area with data safes, badges, color coding, locks, and keys.
- Control production by developing run schedules.
- Maintain updated duplicate files.
- Program design may be improved so that completion instruction will leave no chance for an operator to make an error.
- Maintain an internal security group to guard against sabotage.

Portable Components

One method of constructing a clean room design is the use of portable components which make up the room's ceiling, floor, wall, and fan tower systems. One manufacturer has designed an air supply plenum which consists of independently ducted filter diffusers mounted in an ordinary ceiling, and perforated floor panels for the air return plenum formed by the cavity beneath the raised flooring.

Movable walls, baked enamel on steel, or fused vinyl to hardwood simulating wood grains, attach to metal posts which in turn lock to floor posts.

Safety and Security



Cross Section of Fire System

Under-floor Storage

How Fire Protection Works

Automatic fire extinguishing systems are often taken for granted as initially-rented equipment in new office buildings and plants. Rarely are plans for a new computer center, heavy wiring installation, or valuable storage area drawn up without consulting the business manager, department heads, and fire protection specialists. But automatic fire protection systems can be adapted just as easily and inexpensively into the operational pattern of an older building.

One Installation's History

The home office of Continental Insurance Co., for example, is a 58-year-old 26-story structure located in the heart of New York's financial district. The building was modernized 15 years ago to meet Continental's growth needs as well as those of its tenants. In 1963 the first large computer installation was made, and was protected by automatic detection and fixed CO_2 extinguishing systems. That type of protection has been continued and expanded as changes are made in the building, such as in the computer and tape storage area, which in early 1967 was increased three fold to 9000 square feet.

"Modern office operations on a large scale introduce quite a few protection devices," says Edward Mascio, the building manager. "One such device is a preventive fire protection system that detects and extinguishes a fire within seconds without risk to personnel or damage to equipment and records."

Located on Continental's 11th floor are banks of steel cylinders in which liquid carbon dioxide is stored under pressure. When activated by an alarm from ionization-type smoke detectors, the carbon dioxide is propelled through pipes to the trouble spot.

No 'Live' Dangers

At the point of discharge, the carbon dioxide expends to a gas and extinguishes the fire by reducing the oxygen content in the air to a point at which combustion can no longer be supported. Because the carbon dioxide has dielectric strength greater than air, it can be applied directly to the "live" equipment in the elevator control and computer wiring areas without danger.

Eight main cylinders and eight back-up cylinders cover the computer area, which includes the underfloor wiring, the tape storage room and the air conditioning control room.

An auxiliary tape storage area of approximately 600 feet on the third floor is also protected by a battery on nine cylinders located in the adjacent air-conditioning room.

In all areas, the system may be activated manually as well as automatically. Also, whenever a discharge occurs in any one of the areas, coded alarms are simultaneously sounded in five special locations in Mr. Mascio's office.

Computer Room

As headquarters for the parent company of a number of casualty and property insurance firms, Continental's home office at 80 Maiden Lane handles the nationwide data processing job. Within the 8000-square-foot computer area are a number of IBM 360s, 1401s and extensive support equipment. In addition, Continental maintains a 1000-square-foot tape-storage room and a 600-square-foot auxiliary tape area.

Hot-Box Danger

The under-floor area, where the chance of a "hot-box" incident building into a major fire always exists, is divided into six zones, each covered by the carbon dioxide system.

Should a fire occur in "zone 4," for example, it is immediately sensed by smoke detectors which transmit a signal through the cylinders for that zone. Carbon dioxide is automatically released through directional valves to the trouble zone.

"There are always cylinders on reserve," Mr. Mascio explains, "so that any combination of incidents can be covered automatically."

A big factor in the selection of carbon dioxide as the protective agent is its "no damage" advantage. Not only does it leave electrical equipment free of interference – it is noncorrosive and is a nonconductor of electricity – but since it is dry, it also does no damage to stored computer tape.

"This leaves us free to test the system at intervals," Mr. Mascio points out. "It does not become a major project interfering with the work of the departments."

Similar Kidde detection and extinguishing systems protect Continental's regional offices in Atlanta, San Francisco, Dallas, and Chicago.

EDP Insurance Still Not Fully Developed

Insurance is a major part of any security system. However, electronic data processing is still a new phenomenon in the insurance fields, and many companies have yet to adopt detailed provisions for covering the various dangers.

This means that the data processing manager has to do more than sign on the dotted line. He has to understand just what is meant by some of the clauses – so that he will be able to advise his installation. Here are some major points about insurance contracts for smaller systems.

Of prime importance is the fact that every "all risk" policy does not cover dampness, earthquake, flood, sewer backup, temperature change, and employee dishonesty. Some insurance companies will amend this exclusion to cover "all other" damage which follows mechanical breakdown.

Loss for leased equipment depends on the terms of the lease. Some leases fix responsibility on the user for certain types of loss or damage.

Coverage should include the possibility of total shutdown due to business interruption.

The cost of EDP policies varies, and it is advisable to obtain at least two quotations. Coverage of equipment and media should be excluded by endorsement from fire insurance policies to avoid duplication of insurance and wasted premium dollars, as well as a co-insurance penalty for not including the value of such equipment in fire policies.

Deductions are available and range from $500 to $100,000 under each coverage (up to $250,000 in some states). But very few EDP policies are written with a deductible higher than $10,000.

Even when an installation has full insurance coverage, provision should be made for emergency use of substitute computer facilities.

Little Thought Given Protection

Although large amounts of money and time are spent in selecting the right EDP equipment, it is surprising how little thought is given to its protection from damage – not only to the equipment itself but also to lost records, lost production, and the cost of trying to operate by other means.

Vault Is Best

Loss or damage to programs, tapes, and cards could be disastrous. These should be kept in a separate area, preferably in a vault. Only tapes needed for current operations should be in the data processing room.

Some companies microfilm important records and store the microfilm in vaults away from the main plant or office. The following examples stress the importance of what can be saved with the proper precautions.

A fire in the Pentagon in July 1969 caused extensive damage to three computers and several thousand rolls of magnetic tape. Total loss, including building damage, was $6,700,000. An office building fire in Vicksburg, Miss. destroyed a computer as well as records, drawings, and programs. The loss was more than $400,000.

Many of the records destroyed in these fires were important to the continuity of the operations and might have been saved. A number of types of records have been defined to assist in making plans for their protection.

The following data is taken from standards set by the National Fire Protection Association.

- Class I (Vital) – Records that are essential to the mission of the equipment, are irreplacesble, or would be needed immediately after the fire and could not be quickly reproduced.
- Class II (important) – Records that are essential or important but, with difficulty or extra expense could be produced without a critical delay of any essential missions.
- Class III (Useful) – Records whose loss might cause inconvenience but which could be replaced and not be an insurmountable obstacle to prompt restoration of operations.
- Class IV (Nonessential) – Records which are found to be no longer necessary.

Viewpoint:

Engineer, Systems Analyst, Architect Discuss Their Views

No worthwhile subject ever seems to draw total agreement from the experts. Computer installations have not had their fair share of attention in the literature, but a number of people have discussed them from time to time. It is interesting to compare how different people with different prime duties look at the problems. Often their opinions overlap, but sometimes they bring out nuances that are important and might be otherwise missed.

Here are three such opinions from three separate disciplines.

James C. Hebard, Jr., staff engineer at Honeywell Electronic Data Processing, in an article prepared for *Charette, Journal of Architecture*, has given a detailed technical outline of the computer room requirements.

Architect Important

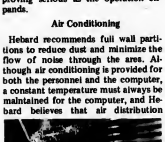
At the very beginning of his article, Hebard tells of the importance of having an architect design the computer room, whether it is a remodeling job or new construction. The architect should have primary responsibility and be allowed continuous supervision to insure a successful EDP installation.

Budget Controls Site

In the early stages of site planning, needed working space is often controlled by the budget and adequate access space is cut to save dollars. According to Hebard, future requirements are sometimes overlooked, or not thought important at the time, proving serious as the operation expands.

Air Conditioning

Hebard recommends full wall partitions to reduce dust and minimize the flow of noise through the area. Although air conditioning is provided for both the personnel and the computer, a constant temperature must always be maintained for the computer, and Hebard believes that air distribution



James C. Hebard, Jr.

should be discussed thoroughly with mechanical engineers associated with the installation. He points out that the degree of air filtration required will be specified by the manufacturer in terms of the discoloration test established by the National Bureau of Standards.

Power Sources

Highly reliable power sources are also important. Voltage variations can cause lost programs or shut downs. Computer manufacturers will usually specify voltage regulations to within plus or minus two percent, but public utilities generally will guarantee only to within plus or minus five percent.

Water and fire hazards are also discussed in Hebard's article, as well as safety recommendations for the protection of records.

A different approach to physical planning and layout was taken by Kenneth E. McGee, architect and Principal of Kenneth McGee Associates, in his speech to the DPMA 1968 International Data Processing Conference and Business Exposition.

McGee defined the work station as an environment which can be controlled and channeled to influence productivity, efficiency, and attendance. "Research in physiology indicates that the unchanging, static environment, regardless of sensory input, is equivalent to none at all," he said. The corporate image and directing design and planning efforts toward finding solutions to humanize the employee's impression of the system were also discussed.

Kenneth E. McGee

According to McGee, "People are the product of environment," and, "We must develop the proper environment if we are to motivate productivity in personnel."

To do this means stimulating the human characteristics of individual identity, a sense of personal dignity or need for status, confidence, realization of self, and security.

Colors, variation of forms and objects, lighting, temperature, amount of furniture, carpeting, draperies, and a clear definition of the work area are some of the problem solving stimuli given by McGee.

He feels that close coordination with the architect is needed to produce solutions which go beyond the initial needs of designing and space layout. Because people and procedures are changing, people cannot be bored into producing.

Electronic data processing can be used to gather data for a full inventory of the existing physical facility including all furnishings, equipment, and specialties. From this information a program is written which includes long range planning of needs for space, equipment, and personnel. The schematic design and final design phases are based on this program. "I highly encourage you to use the computer as a planning tool," says McGee. "If you do, find a firm that is familiar with programming procedures and be careful what you choose to program — it could cost you money instead of saving it."

Mr. Nicholas Suczynski, Director of Information Systems Division, Smithsonian Institution, approaches the planning of an electronic data processing facility as though engaging in systems design.

In a paper prepared for the DPMA 1968 International Data Processing Conference and Business Exposition, Suczynski describes the planning as consisting of "establishing objectives, translating these objectives into a series of tasks and events which must be accomplished, and carrying out these tasks and events within the constraints of time and money."

He recommends establishing a task force to include the manager of information systems, plant engineering, and the head office, and charging this task force with the responsibility of developing an installation plan.

Suczynski defines the different arrangements for a closed shop, open shop, and a closed shop with remote batch data entry and time-sharing terminals.

Placing the EDP facility wherever an unoccupied space is available should be avoided, according to Suczynski. The site should not hamper the flow of work to and from the facility, and a thorough study should be made of the equipment to be used and the size of the staff required to support it.

When the site has been selected and

Nicholas Suczynski

the system and staff requirements are known, the task group should develop the schedule for site preparation and installation of the equipment. Suczynski says, "The manufacturer of the computing equipment can be depended on for the recommendations concerning space arrangements. Every manufacturer will insist on participating in the layout of the computer room. This they must do to ensure compliance with the limitations imposed on the lengths of the interconnecting cables, the adequacy of electric power and to assure that the humidity, temperature, and clearance requirements for the equipment will be met."

Some manufacturers will provide layouts for the entire computer room, while others will not. They will provide installation manuals and instructions recommending a time frame. According to Suczynski, "These guidelines are meant to be used only as guidelines; local conditions will determine whether an order for the purchase of the air conditioning equipment should be placed 20 weeks or 10 weeks before the arrival of the computer."

An important consideration is being sure that the contractors bidding for the site preparation understand all the requirements. Accepting a low construction bid could prove costly.

Also, Suczynski points out that the environment of the people who work in the computer room should be as "pleasing, spacious, and livable as possible." In one computer facility at the Smithsonian Institution the rooms are painted bone white, with accent walls in "earthy gold," "Polynesian sunset," and "Siamese blue."

Supplies and Equipment

Forms Handling, Storage

The glamorous part of computers is, of course, the central processor. It is the first thing that is shown when visitors look around a center. But while it may be the center of attraction, there are many other pieces of equipment around it which require careful attention.

Input/Output Units

The units around the processor include various types of input/output machines. They have one thing in common. They all use a medium — paper, magnetic tape, disk packs, cards, documents — which must be brought to them and taken from them. The more powerful the medium, the more the need for this feeding grows. And they are now so powerful that the organization of the "forms handling" function is becoming a major picture in any well run installation.

Handling Costs

Just to get an idea of where the money is actually being spent, you need only look at some of the estimates of the handling costs. One of them suggests that for every dollar spent on the purchase and production of forms, there is at least $20 worth of expense involved in using the form. Moreover, while the various computers have become more sophisticated, they have also become in some ways more demanding.

Forms Specialists

This means that there is now the need for more sophisticated media of all types, both for the machines and for the working efficiency of the people who are using the media. The result has been the need for specialists to help design the whole process. Some companies employ internal specialists to analyze the problems and to design and control the use of media. Most companies, however, go to outside specialists.

Paper Shredder

There are manufacturers who specialize in the design and production of forms for electronic data processing to capture source data from computer input and to meet the exacting specifications of scanning equipment. Such form design must be accurate and printing must be precise in inks and positioning.

Forms Handling Equipment

The sophistication of the data processing forms will generally require forms handling equipment for after-handling jobs. Engineered as modular units, some forms handling equipment can function alone or in concert with other pieces of equipment.

Deleavers, bursters, collators, copy machines, and splicers, are some of the units required for this function of the computer room.

Security Needs

As the computer continues to print more and more yards of paper, a number of ancillary problems arise, including such items as keeping appropriate data confidential. Generally, only a small proportion of the output may have to be particularly safeguarded, but some facility should be available in the computer room to effectively provide for the safe destruction of records when appropriate. Paper shredders and company confidential waste systems, if available, are among the ways of satisfying this requirement.

Tapes and Disks

Unlike the situation of printed forms in the computer room, magnetic tapes and disk packs rarely need to be considered for operations outside the computer room. Their quality is generally good, and many of the complexities of the control of paper forms are not present. However, special provisions have to be made for their storage, movement, and security.

Tape boxes have been designed to provide a safe and convenient means of storing or transporting magnetic tapes, and to protect them from dust and dirt. Storage cabinets designed for maximum safety are available for storing punched cards and paper or magnetic tapes.

Auxiliary Equipment

Auxiliary equipment such as trucks for transporting cards or tape reels, sorter racks, desks for programmers are all part of the computer room environment. The manufacturer is aware of all these needs and has designed equipment to fulfill them.

Lack of Interest and Reaction Cited

(Continued from Page 1)

mendation was reluctantly acted upon by ACM President Bernard Galler, Miss Sammet told *Computerworld*.

The action followed as a result of an across-the-board move to tighten up Special Interest Committees which had outlived their official charter period.

The official procedure is for Special Interest Committees to become Special Interest Groups after the one year period. Miss Sammet had, as a matter of course, written to those committees which were overdue to become groups.

No Signa of Life

No reply was received from the SICSIC chairman, and no mailing list appeared to be available. No ACM members had requested information from, nor expressed complaints about the inactivity of the committee to Miss Sammet. Under the circumstances, she felt that she had no choice but to recommend dissolution.

Personal Comment

Asked for her comments, Miss Sammet said, "My personal feeling is that the ACM mechanism for Special Interest Committees and Special Interest Groups should be used for technical (including training and management) subject areas. If this had been a thriving Special Interest Committee or Group, it would have been left alone to continue to serve its members. Since there were no identifiable members, and I hold the above view, it seemed more appropriate to recommend official dissolution. If any ACM members wish to restart this activity, a petition for a new Special Interest Committee will be considered on its merits, independent of past history."

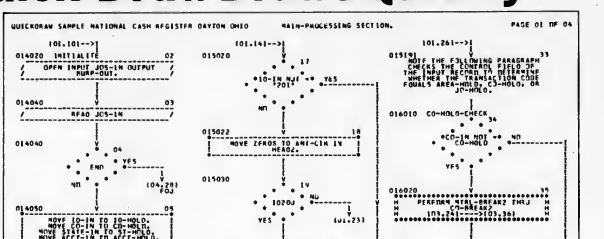
More Non-IBM Terminals

(Continued from Page 1)

and the Dura 1021 and 1041 are supported.

Relative advantages to customers might include different lease lengths, different character sets, different carriage sizes, coding options (such as the tilt-rotate code available through Dura), plus functional and connection options, according to SBC.

The expansion of service is a step in the direction of broadening the base of the system, and expanding its marketability, according to the company.



New Quick-Draw Draws Quickly

DAYTON, Ohio – Flowcharting, cross-referencing, indexed listing, and speed are the primary advantages of the Quick Draw package offered by National Cash Register Co.

The package provides documentation for most major languages on most major machines, the company claims. The package supports Autocoder, Assembly Language, PL/I, Cobol, Fortran, and other languages, according to the company.

The program source statements are used as input, and the output is in three parts. The indexed listing of the program numbers each statement and prepares a normal program listing.

The cross-reference listing produces a vertical list, much like a normal index for a book, containing the data-field name, the statement where the name is defined, and a list of statements referencing the data-name.

The flowchart is produced three-up, in other words reading from top to bottom and from left to right with three vertical columns. The flowchart can operate using several types of symbols for output, producing several standard block shapes for the chart (see chart).

Extreme Speed

The program earns its name, according to a company spokesman, because it can chart 250 source statements per minute using standard USASC II codes.

Originally developed by National Computer Analysts, it is being marketed by NCR because it offers several fundamental advantages over other automatic flowcharting languages, according to the company.

The company feels that this type of automatic flowcharting can reduce programming costs 30% by eliminating manual flowcharting at all levels, speeding debugging by aiding in error detection, and reducing the programmer time required for documentation and maintenance. Use of the program also saves significant amounts of machine time, the company claims.

Input and output can be accepted on any standard system I/O device. The package can run on any version of the IBM 360, under the standard operating systems. The program is also available on several other machines as well, the company points out.

Quick-Draw produces accurate, computer-drawn flowcharts from the program source language statements. The concise, easy-to-read flowcharts are printed in a double-page format with three vertical flow path columns. Quick-Draw decision blocks are 3.2 inches wide with the statements centered in the block.

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QUICKDRAW SAMPLE NATIONAL CASH REGISTER OAYTON OHIO          CRUSS  REFERENCE TO OATA NAME              PAGE 01

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• ACCT-IN                             • 0039 • 02A7 0342 035A 0420 0464                                       •
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• ACCT-PL1A                           • 0189 • 0450 0407                                                      •
• ACCUM-CTRS                          • 0201 • 0407 0424                                                      •
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• ANT-CTR                             • 0114 • 0313                                                           •
• ANT-CTR                             • 0121 • 0300                                                           •
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The Cross Reference to Data Name report is prepared in alphabetical sequence by data name. Each data name is listed with the Quick-Draw esigned statement sequence number.

New System "Dreams Up" Homes With Computer's Aid

By a CW Staff Writer

SALT LAKE CITY, Utah – A computer system to design residential buildings and commercial offices is being developed by researchers at the University of Utah on its Univac 1108 system.

The system, once perfected, could be installed in the offices of architects or builders to facilitate the design stages. The unit operates through a CRT display system, providing multiview display capability.

Builders would be able to show prospective clients various designs and features which might be desirable for a prospective homeowner.

The system would operate like this: Using a remote terminal, the architect would enter the general specifications for a home. The computer would respond with a shaded perspective of the house.

By manipulating a joystick control, the architect could rotate the house to produce any desired viewing angle. If a standard design was selected, the architect would simply enter an identification number and the desired design would be displayed.

Should changes be required, the architect enters them. The computer recomputes the design and explains where such changes would not be possible due to structural limitations, as well as displaying the redesigned house.

Program Conversion from Pal-3 and Macro-8 to Macro-9 Now Possible

MAYNARD, Mass. – A translator package that will make it possible to adapt a major part of the code written for the PDP/8 family of computers in PAL III, PAL D, or Macro-8 assembly language to the medium-size PDP/9 computer line Macro-9 assembly language will be available in early March, according to Digital Equipment Corp.

The new translator is designed not to produce a program that runs on the PDP/9 by simulating the PDP/8, but to translate a major portion of the source code and indicate those parts that should be reviewed in the light of larger word length and larger instruction set for the PDP/9.

In addition, a statistical package, called Statpac, for use with the PDP/9, has been released. The statistics package is a collection of modular programs. They were written in Fortran, and designed to operate with the PDP/9 Keyboard Monitor system.

The package consists of five modules: control, input, descriptive statistics, stepwise linear regression, and multiple linear regression. It is currently available with the PDP/9, the company said.

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SECTION PG. 21

Business Applications Simplified for PDP/8

ANN ARBOR, Mich. – Users of the PDP/8 family of computers in business applications now have available a Business Oriented Software System (BOSS), developed by Information Control Systems, Inc.

BOSS was designed especially for easy use in programming business oriented applications such as: payroll, general ledger, job costing, inventory control, accounts receivable, and accounts payable, the company claims.

The only knowledge required to program with BOSS, the company further points out, is that of basic arithmetic.

Several standard application packages have already been written, according to Information Control. They will design and implement any application package for which sufficient interest is shown. The company also points out that they can supply the total system, including the PDP/8L, BOSS, and application packages.

Sperry Opens New Univac Center in West

SAN FRANCISCO – Sperry Rand's Univac Information Services Division recently opened a new Far Western Computer Center in South San Francisco to complete a coast-to-coast link in its national network of data processing facilities.

The new center, located at 453 Forbes Blvd. in South San Francisco's Cabot, Cabot & Forbes Industrial Park, uses a Univac 1108 computer which can communicate with other Univac Information Services Division Computer Centers in Mineola, N.Y., Phoenix, and Chicago, and with numerous branch offices throughout the country.

Besides the 1108, the center includes a Univac 418 system, Univac 1004 card processors, and other equipment. The South San Francisco center is also linked with Univac 9300 computers and terminal equipment at branch offices and at many customer locations.

The Information Services Division also announced that the centers are now offering a new remote batch service. Called RPS (Remote Processing Service), this service allows customers to economically use the 1108 for many purposes from terminals in their own offices.

ITT Unit Forms National Programming Department

PARAMUS, N.J. – A national programming services department has been established by ITT Data Services as part of its expansion program.

Located in such cities as New York, Washington, D.C., and Los Angeles, these computer programmers and systems analysts and designers will provide ITT division's customers with a full spectrum of computer software services.

Edward W. Karn was named vice president and general manager of programming services.

Karn, formerly vice president and director of the ITT division's Eastern Region, will be responsible for the over-all direction of programming operations throughout North America.

Services

New Keypunch School in NY

NEW YORK – Informative Computer Services, Ltd., a data processing service bureau oriented towards commercial accounting applications, announced today the opening of a keypunch school on the company's premises, 171 Madison Ave.

Noah Fleschner, board chairman of the company, noted that the school, which is to be known as Informative Keypunch School, will offer courses for beginners in addition to refresher courses.

IBM 360 Available As Super Desk Computer

CHICAGO – A computing system called Calctran, is now available to engineers, mathematicians, and students in the Chicago area that allows them to utilize the Illinois Institute of Technology's IBM 360 for use as a super desk calculator.

Calctran features include trigonometric functions, logarithms, complex numbers, iteration calculations, plotting capability, programming capability, and many others.

'Magic' Helps Labels

DALLAS – Magic (from MAGazine Industry Circulation System), a proprietary computer service for magazine subscription fulfillment, is now available from the Data Link Division of University Computing Co.

The system is designed to automate the tedious clerical chore of maintenance and updating of magazine subscription lists. As a by-product the Magic system will prepare audit reports in conformity with Audit Bureau of Circulation and Business Publications Audit requirements as well as generate a host of special marketing reports on magazine subscribers.

Monthly mailing labels are also produced on a high-speed computer printer.

Leontief Analysis Ready on Time Share

NEWTON, Mass. – Dial-Data, Inc., a Newton-based time-sharing organization, has announced a new time-shared program for Economic Input-Output Analysis based on the noted model authored by Harvard Professor Wassily Leontief.

Input-Output Analysis is an econometric technique based on gross transactions between industry groups. The purchases (outputs) by one industry are also another industry's sales (inputs).

Combinations of inputs and outputs are organized in a single table and suitably scaled, becoming a working tool for analyzing the relationships between industry and the nature of the economy.

Dial-Data, Inc., currently has offices in Newton, Mass.; Englewood, N.J.; Rockville, Md.; and has just opened a new office in St. Petersburg, Fla.

Service Ready

SANTA ANA, Calif. – Interactive Computing Corp. offers the services of a newly installed 48K PDP-10 computer with disk storage.

A DEC 680/I communications control system will interface with the PDP-10. Fortran, Basic, Cobol, Macro, and Aid are among the languages being offered.

smtwtfs calendar smtwtfs

Feb. 25-28, Mexico City, Mex. – DPSA Winter Annual Membership Meeting. Contact: Data Processing Supplies Assoc., 211 E. 43rd St., New York 10017.

March 24-26, Tallahassee, Fla. – 10 Meeting of VIM (Users Group of Control Data 6000 Computer Series). Contact: Dr. E.P. Miles, Jr., Professor of Mathematics and Dir. of Computing Center, Florida State University, Tallahassee.

March 24-27, New York – IEEE International Convention & Exhibition. Contact: IEEE, 345 E. 47th St., New York 10017.

March 24-28, St. Louis, Mo. – Univac Scientific Exchange Conference. Contact: Harry Rayner, Univac, P.O. Box 8100, Philadelphia 19101.

COMPUTERWORLD

financial

Leasco Data Aims Toward European Acquisitions

PARIS – Leasco Data Processing Equipment Corp. has agreed to buy 20% of Sema (Metra International). Metra is a large, Paris-based management and computer service organization.

The total price may be as high as $12.2 million, depending on Metra's earnings through 1973.

Metra, with 1968 earnings of $33 million, is active in management consulting, market and operations research, computer service, and other fields.

The two companies also mentioned that Berliner Handels Gesellschaft, a German bank, has also taken an interest in Sema.

Sema said the Paris government "welcomed" the transaction with Leasco, but formal French approval is still required.

Sema owns all of the Metra operation in France and has a 50% interest in Metra operations in Britain, Belgium, West Germany, Italy, and Spain.

Computer Network

In other developments, Scientific Data Systems Inc. said that Leasco Systems & Research Corp., a subsidiary of Leasco Data Processing Equipment, will purchase up to $40 million of computers from Scientific Data over the next five years.

The computers are for use in a worldwide time-sharing network. Delivery of the first system, valued at approximately $1 million, is scheduled for April.

Levin-Townsend Makes Offer Of $1.5 Billion for Insurance Co.

NEW YORK – Levin-Townsend Computer Corp. is planning a new bid to take over INA Corp., a Philadelphia-based insurance company with a tender offer totaling nearly $1.5 billion in securities.

Levin-Townsend's total assets, as of March 31, 1968, were $112.2 million compared to INA's $1.98 billion at the end of 1967, or roughly 17 times greater.

The package of securities offered for each INA share is valued by Levin-Townsend at $60 a share. INA has 23 million shares outstanding.

Levin-Townsend's latest earnings report for the six months ended last Sept. 30 showed earnings of $5.2 million, or $1.58 a share, on revenue of $18.1 million.

INA's earnings for the nine months ended last Sept. 30 was $19.3 million, or 85 cents a share.

It was recently reported in *Computerworld* that Levin-Townsend had dropped the idea of bidding for INA when the SEC on Jan. 22 informed the company that it risked violating proxy-solicitation regulations if it made a bid for INA while INA was negotiating to acquire World Airways.

Digital's Newest Computer Line Is Commercial, Byte-Oriented

Special to Computerworld

MAYNARD, Mass. – Digital Equipment Corp., known for its small, word-oriented computers, apparently is about to announce its first commercial, byte-oriented, general-purpose computers.

Word of the new family of computers leaked out early this month although the company apparently had not planned to make an announcement until spring, possibly at the Spring Joint Computer Conference in Boston in May.

Under questioning from news media, Digital made the following brief statement:

"The latest in a long line of small, general-purpose computers, actually a family of 8/16-bit, byte-oriented machines, was announced today by Kenneth H. Olsen, president of Digital Equipment Corp.

"Olsen said that, in its most basic form, a control unit could sell for $4000 to $5000. the line. The line features extreme ease of programming and a unique range of peripheral devices."

Introduction of the product is expected in three or four months, Olsen said.

Randolph Gets 14 Million Eurodollars

Special to Computerworld

NEW YORK – Randolph Computer has announced the completion of a $14 million Eurodollar financing arrangement with a consortium of U.S. and European banks.

These funds are to be used to expand the company's U.S. and Canadian operations and have been borrowed under a newly created provision of Randolph's existing loan agreement with U.S. banks and insurance companies.

John M. Randolph, chairman of the board, stated that the ability to use Eurodollars greatly expands the company's sources of funds.

Honeywell's Fourth Quarter Up 24%, Year End – 10.6%

MINNEAPOLIS – "Continued strong demand for Honeywell's data processing products and services in 1969" was forcast by James H. Binger, Honeywell's board chairman, when he released the company's record fourth quarter and 1968 year-end results.

Unaudited fourth quarter earnings of $20 million, equal to $1.35 a share, compared to $17 million, or $1.15 a share in the year earlier – an increase of 17.5%.

Fourth quarter sales of $368 million were up 24% over 1967 fourth quarter sales of $297 million.

Indicated earnings for the year ending Dec. 31, were $50.5 million, equivalent to $3.41 a common share, up 19.6% from the previous year's $42.3 million, equivalent to $2.85 a share.

Sales for the year increased 22.6% to $1.281 billion, against $1.045 billion in 1967.

Binger said both earnings and sales established new highs for the company in each quarter of 1968. He noted that all major product lines contributed to the earnings improvement.

"In the market for data processing products and services overseas," Binger added, "it appears that the substantial increase realized last year will be exceeded in the current year."

Binger said the outlook is for moderate increases in the industrial sector of the company's business. Aerospace and defense business levels will be affected by developments in Southeast Asia that cannot be forecast, he mentioned.

Granite's Bank Bid Worth $100 Million

GARDEN CITY, N.Y. – Granite Equipment Leasing Corp. said that it is planning to bid for the rest of Security National Bank of Huntington, N.Y., through a stock exchange valued at over $100 million.

In spite of fierce opposition by the bank, Granite said it will file "shortly" with the SEC its offer for the Long Island bank, and that its holdings now exceed 490,000 shares, or about 22.5% of the 2,172,089 shares outstanding.

Under the proposed offer, Granite would issue one share of a new convertible preferred stock and two warrants for each of the bank's outstanding capital shares.

The preferred would carry a $1.10 annual dividend and would be convertible into 0.7 share of Granite common. Each warrant would be exercisable at $45.25 for one Granite common share.

Security analysts have placed the value of the package at $65 to $68.

Patrick J. Clifford, Security National president, said that since the current management took office three years ago, the Security National's growth had been "phenomenal."

UCC 1969 Earnings May Go to $4

NEW YORK – University Computing Co. earnings per share in 1969 may be in the $3.50 to $4.00 range, UCC president Sam Wyly advised an audience of institutional investors in New York.

He also stated that the planned combination of Computer Industries, Inc. and Computer Leasing Co., two subsidiaries of UCC, would produce 1969 sales above $60 million and possible earnings of $1.25 to $1.45 per share for Computer Industries, Inc.

For UCC the 1969 profit goals would be about double the anticipated results for 1968.

COMPUTER STOCKS: TRADING SUMMARY

Week Ended Feb. 7, 1969

EXCHANGE	BASE PRICE 1968-69 RANGE		CLOSING PRICE	COMPUTER SYSTEMS	WEEK NET CHANGE	WEEK NET CHANGE FROM BASE	% % CHANGE FROM BASE	CLOSING
	3-168							
NYSE	563 3/8	252—137	229 1/8	• Burroughs	+ 4 3/4	+ 2.04	+ 45.32	
NYSE	67 3/4	119— 84	65	Control Data	—	—	— 8.49	
NYSE	101 1/2	176— 99	190 1/4	• Control Data	— 1 1/4	0.85	+ 87.50	
AMSE	108	177— 96	161 1/2	• Digital Equipment	+ 3/4	+ 0.47	+ 56.83	
NYSE	19 1/8	37— 18	33 1/8	Electronic Assoc.	+ 5/8	+ 2.63	+ 37.37	
NYSE	87 1/4	100— 81	90 3/4	General Electric	— 2	2.16	+ 4.01	
NYSE	60	95— 57	79 1/4	Hewlett-Packard	+ 2 1/2	+ 3.06	+ 32.08	
NYSE	93 1/8	144— 89	120	• Honeywell	+ 3 5/8	+ 3.11	+ 28.86	
NYSE	388 1/2	375—280	297 1/4	• IBM	+ 1	+ 0.34	+ 3.03	
NYSE	103 7/8	153— 90	114 1/4	• NCR	+ 3 1/4	+ 2.81	+ 9.99	
NYSE	46 7/8	63— 44	44	RCA	— 1/8	— 0.26	— 9.15	
NYSE	39 1/8	64— 44	49	Raytheon	— 2	— 4.09	+ 18.02	
OTC	22 1/2	66— 36	36	Sci. Control Corp.	+ 1/2	+ 0.00	+ 66.00	
NYSE	76 3/4	94— 70	94 3/4	• Scientific Data	+ 8	+ 9.22	+ 20.32	
NYSE	45	93— 42	84 3/4	• Sperry Rand	+ 3 3/8	+ 5.73	+ 18.88	
AMSE	12 1/2	20— 10	20	• Systems Eng. Labs	— 1 6/8	— 0.88	+ 20.00	

EXCHANGE	BASE PRICE 1968-69 RANGE		CLOSING PRICE	PERIPHERALS & SUBSYSTEMS	WEEK NET CHANGE	WEEK NET CHANGE FROM BASE	% % CHANGE FROM BASE	CLOSING
	3-168							
NYSE	58 3/8	91— 52	69 7/8	Addressograph-Multigraph	+ 1 7/8	+ 2.76	+ 19.76	
OTC	23	38— 22	34 1/2	Alphanumeric	+ 1	+ 1.74	+ 178.57	
NYSE	29	41— 36	37 1/2	Ampex	— 1/8	— 0.33	+ 39.31	
OTC	17	17 1/4— 14	17 1/4	Bolt, Beranek & Newman	— 1 3/4	— 8.97	+ 2.80	
NYSE	13 1/2	27— 14	15 7/8	Bunker-Ramo	—	—	+ 17.99	
AMSE	32 1/8	50— 27	34 3/4	• CalComp	+ 1 1/8	+ 3.35	+ 8.17	
OTC	24 1/2	32— 20	32 1/2	Cognitronics	+ 1 1/2	+ 4.00	+ 4.00	
OTC	12	18— 10	14 7/8	Computer Equipment	+ 1/8	+ 0.85	+ 23.96	
AMSE	15 1/4	30— 13	23 1/2	Data Products	+ 1/2	+ 3.07	+ 54.10	
OTC	19 1/4	27— 19	19 1/2	• Digitronics	— 1 1/4	— 6.02	+ 1.30	
OTC	8	29— 7	28 3/4	• Electronic Memories	+ 2 3/4	+ 6.78	+ 40.20	
OTC	10	29— 8	11 5/8	• Fabri-Tek	+ 1/8	+ 0.82	+ 19.29	
OTC	20 9/8	68— 19	36 3/4	Farrington Mfg.	+ 4 3/4	+ 14.84	+ 76.15	
OTC	12 1/2	26— 10	18 1/2	Information Displays	— 1	— 4.00	+ 48.00	
AMSE	16 7/8	92— 14	32 1/8	Mtge Electronics	+ 7/8	+ 2.79	+ 91.11	
AMSE	57 1/2	105— 54	71 1/8	• Mohawk Data Sciences	— 7/8	— 1.21	+ 23.78	
OTC	74	145— 71	108	• Optical Scanning Corp.	— 5	— 4.42	+ 45.95	
OTC	12	42— 19	27 7/8	Photon	+ 1 3/8	+ 5.19	+ 54.85	
AMSE	25 5/8	49— 23	35	• Potter Instrument	+ 1 3/4	+ 5.26	+ 35.59	
OTC	40 1/4	99— 38	59	Recognition Equipment	+ 4	+ 5.48	+ 71.43	
AMSE	16	29— 14	22 1/4	Rixon Electronics	+ 1/8	+ 0.56	+ 38.06	
NYSE	46 1/8	66— 42	59 3/4	Sanders	+ 2 7/8	+ 5.06	+ 29.54	
OTC	47	66— 53	57	Scan-Data	+ 3 1/2	+ 6.18	+ 53.19	
OTC	40 1/2	81— 36	53	• Tally Corp.	— 1/2	— 1.49	+ 18.52	
NYSE	262 1/4	352—229	287 3/8	Xerox	+ 1 1/8	+ 1.23	+ 10.53	

EXCHANGE	BASE PRICE 1968-69 RANGE		CLOSING PRICE	SUPPLIES & ACCESSORIES	WEEK NET CHANGE	WEEK NET CHANGE FROM BASE	% % CHANGE FROM BASE	CLOSING
	3-168							
OTC	26 1/2	39— 27	23	• Bunn-O-Matic	— 3 1/2	— 3.27	— 11.36	
NYSE	20 1/2	28— 15	20 1/8	Adams-Millis	— 6/8	— 2.95		
OTC	13 9/8	29— 13	26	• Battimore Business Forms	—	—	+ 90.83	
OTC	27	37— 27	35 3/4	• Berry Wright	— 1/2	— 1.90	+ 4.62	
OTC	31 1/4	46— 36	44	Data Documents	— 1/2	— 1.12	+ 40.90	
OTC	27 1/4	31— 28	30 1/2	• Ennis Business Forms	— 1/2	— 1.61	+ 11.84	
NYSE	84 1/8	119— 81	68 1/8	• 3M Company	— 7/8	— 1.27	+ 17.46	
NYSE	58	93— 48	93 3/4	Memorex	+ 5/8	+ 0.63	+ 16.57	
OTC	27 1/4	33— 27	32 1/2	• Moore Business Forms	+ 1/2	+ 00.14	+ 19.18	
NYSE	57 1/4	49— 24	44 7/8	Nashua Corp	+ 3 7/8	+ 9.45	+ 21.62	
OTC	31 1/4	46— 31	41	Reynolds & Reynolds	+ 1	+ 2.00	+ 5.13	
OTC	36 1/2	39— 24	36 1/4	• Standard Register	— 1/2	— 1.74	— 18.12	
NYSE	37 3/8	46— 33	39	Varo	— 1/2	— 1.26	+ 4.39	
AMSE	14 1/4	23— 13	17 1/2	Wabash Magnetics	+ 1 3/4	+ 8.92	+ 29.44	
OTC	23 3/4	37— 24	29 1/2	• Wallace Business Forms	— 1/2	— 1.72	+ 14.58	

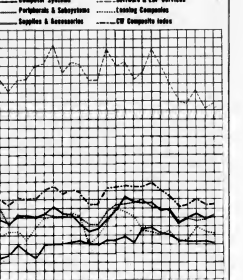
EXCHANGE	BASE PRICE 1968-69 RANGE		CLOSING PRICE	SOFTWARE & EDP SERVICES	WEEK NET CHANGE	WEEK NET CHANGE FROM BASE	% % CHANGE FROM BASE	CLOSING
	3-168							
OTC	7 1/2	26— 7	11 1/4	Advanced Computer Techniques	— 1/2	— 4.26	+ 50.00	
OTC	17	34— 14	25	• Applied Data Research	+ 2	+ 3.03	+ 106.66	
OTC	16 1/2	22— 13	19	• Artes	— 1	— 5.88	+ 3.23	
AMSE	47	75— 42	72 1/4	• Automatic Data Processing	— 3/4	— 1.03	+ 53.72	
OTC	4	19— 4	11 3/4	Automation Sciences	+ 1/4	+ 2.17	+ 193.75	
OTC	4 1/2	23— 3	17	• Brandon Applied Systems	+ 1/2	+ 3.03	+ 277.78	
AMSE	22 7/8	43— 21	41 5/8	Computer Applications	— 1/8	— 0.30	+ 18.53	
OTC	5	15— 7	12	Computer Environments	— 1 1/2	— 11.11	+ 140.00	
OTC	30	64— 30	64	Computer Network	+ 2	+ 3.57	+ 28.57	
NYSE	40	64— 36	62 1/2	• Computer Sciences	— 3/4	— 1.19	+ 56.25	
OTC	29	61— 28	36	• Computer Usage	+ 1	+ 2.89	+ 7.59	
AMSE	36 1/2	92— 30	90	• Computing & Software	+ 1 3/4	+ 1.98	+ 146.58	
OTC	12 1/2	26— 8	22 1/2	Datamation Services	— 1/2	— 2.17	+ 80.00	
OTC	14 1/2	25— 14	14	Datatab	— 1/2	— 3.70	— 3.44	
OTC	12 1/2	20— 9	14	• Digitek	—	—	+ 12.00	
AMSE	30 3/8	60— 30	51 1/8	Electronic Computer Prog. Inst.	+ 1 1/4	+ 3.50	+ 11.07	
OTC	17 1/2	34— 19	24 3/4	• Informatics	+ 3 1/4	+ 11.81	+ 15.43	
OTC	21	28— 4	16 1/4	Matrix Corp.	— 1/4	— 1.61	— 27.38	
OTC	5	26— 4	14	• National Computer Analysts	+ 2 1/2	+ 14.28	+ 200.00	
AMSE	31	51— 28	29	Planning Research	+ 1/8	+ 0.43	— 5.45	
OTC	13 1/4	115— 10	10 1/2	Programming & Systems	— 1/2	— 4.55	— 20.71	
OTC	9	19— 5	7 1/8	Software Systems	+ 1/2	+ 7.14	+ 19.67	
OTC	29 1/2	52— 29	32	Strategic Systems	+ 1	+ 3.49	+ 1.99	
OTC	20 1/2	22— 10	14 1/4	TBS Computing Centers, Inc.	+ 2 1/4	+ 18.75	+ 30.49	
OTC	813	812— 10	9	United Data Centers	+ 1/4	+ 2.85	+ 25.00	
OTC	63	182— 52	182	• University Computing	— 17	— 11.56	+ 188.88	
OTC	820	836— 20	38 1/2	URS Systems Corp.	+ 2	+ 5.48	+ 92.50	
OTC	830	830— 19	17	U.S. Time-Sharing	—	—	+ 43.33	

EXCHANGE	BASE PRICE 1968-69 RANGE		CLOSING PRICE	LEASING COMPANIES	WEEK NET CHANGE	WEEK NET CHANGE FROM BASE	% % CHANGE FROM BASE	CLOSING
	3-168							
OTC	18	56— 16	44 1/2	Boothe Computer	— 1	— 2.20	+ 147.22	
OTC	4 1/8	14— 4	12	Computer Exchange	+ 2 1/2	+ 8.52	+ 278.47	
AMSE	25 1/8	36— 21	33 1/2	• Computer Leasing	+ 2 3/8	+ 7.63	+ 33.33	
OTC	s13 3/8	615— 12	12	Continental Computer	—	—	+ 21.95	
OTC	12 1/4	16— 11	11	• Cyber-Tronics	— 1/4	— 2.22	+ 10.20	
AMSE	105 6/8	92— 44	51 1/2	• Data Proc. Financial & General	+ 2 3/8	+ 4.41	+ 91.70	
OTC	25	34— 13	12 1/2	Datronic Rental	— 1/2	— 3.85	+ 50.00	
OTC	20	59— 18	52 1/2	Dearborn Computer	+ 1 1/4	+ 2.44	+ 162.90	
OTC	13 1/4	14— 13	14 1/2	• DPA, Inc.	— 1/4	— 1.75		
AMSE	28 3/4	43— 25	39 3/4	• Greyhound Computer	+ 3 1/8	+ 7.29	+ 41.33	
AMSE	28 1/8	69— 26	26 1/2	Granite Equipment Leasing	— 1/2	— 1.85	— 7.83	
AMSE	46	139— 41	137 1/4	• Leasco	+ 3/4	+ 2.52	+ 199.10	
OTC	9	14— 9	9 1/2	Lectro Computer Leasing	— 1/2	— 5.56	+ 70.00	
AMSE	30 3/4	46— 27	31 5/8	• Levin-Townsend Computer Corp.	+ 3/4	+ 2.36	+ 67.85	
OTC	10 1/2	16— 7	7 1/4	• LMC Data, Inc.	— 1/4	— 3.33	— 30.95	
OTC	10 3/8	16— 10	12 7/8	• Management Assistance	+ 1/2	+ 3.74	+ 24.10	
AMSE	41 6/8	53— 25	38 5/8	National Equipment Rental	+ 1 3/4	+ 4.75	— 7.21	
OTC	s13 1/4	s14— 8	10	NCC Leasing	— 3/4	— 8.98	+ 24.53	
AMSE	38	64— 35	40 1/2	• Randolph Computer Corp	+ 2 5/8	+ 9.09	+ 8.48	
OTC	10 1/2	53— 10	30 2	System Capital Corp.	+ 2	— 9.09	+ 185.71	
OTC	10 7/8	28— 10	25	Xerox	+ 5/8	+ 2.56	+ 129.89	

s—Since 10/18/68 *Companies included in Computerworld's stock trading index for each sector.

Computer Stocks Trading Index

Computer Systems ..... Software & EDP Services
Peripherals & Subsystems ..... Leasing Companies
Supplies & Accessories ..... CW Composite Index



Composite Gains Little, Software Climbs 1.3%

Computerworld's Composite Stock Index closed up slightly, .593 points (.4%) to 138.55 for the week ended February 7 in a market which showed little active gains.

The Dow-Jones Industrial Average closed up 1.80 points (0.196%) to 947.85 and the Dow-Jones price-earnings ratio showed rises from the same time last year of 0.2 points to 16.6. The NYSE composite average rose 0.35 points to 58.65 over the week while the AMSE Index fell 7 cents per share to $32.60. Standard & Poor's industrial index rose .72 points to 112.35. The N.Q.B. over-the-counter industrial average rose 1.62 points to 418.52.

Volume on the NYSE was 65,165,000 shares, up from last week's 59,607,000 shares. Volume on the AMSE was 3,436,000, down from 39,786,000 last week. Bunker-Ramo Corp. was the only *Computerworld* listed stock appearing on the 20 most active list with sales of 666,900 shares and no change in price over the week.

IBM Gains Under Antitrust Pressure

Successfully withstanding all the antitrust pressure, IBM managed to gain 1 point (0.34%) to 297-1/4, while Honeywell and NCR showed larger gains at about 3 to 4 points (about 3%).

Possible effects of the proposed Xerox/SDS merger were not shown on the market, due to the lack of Friday's closing prices. SDS still gained eight points (9.22%) to 94-3/4. No new highs or lows were shown in *Computerworld* listed stocks.

Few new highs or lows were recorded for the NYSE (108 new highs, 54 new lows).

The *Computerworld* Composite Index rose only .593 points, typical of the performance in all sectors.

The leading rise occurred in the Software & EDP Services sector, 2.58 points (1.3%). The rise was led by TBS Computing Centers with a rise of 18.75% (2-1/4) and opposed by University Computing's drop of 11.56% (17 points) to 130. The percentage change from base for UCC was sufficiently small to have little effect on the index. Average gains in the sector ranged from 3% to 4%.

The largest loss was in the Supplies & Accessories sector with a drop of 1.276 points (1.1%). The loss was led by Acme Visible with a drop of 3-1/2 points (7.53%) to 43. The only significant opposition to the losing trend in this sector was that of Nashua Corp. with a rise of 9.45% (7/8) to 44-7/8.

Changes in other sectors were generally small with the exception of Peripherals and Subsystems, which showed a gain of 2.149 points (1.7%) to 131.549. The Computer Systems sector showed a slight rise, .483 points (.5%, to 130.183). The Leasing sector showed a slight drop to 121.131 – a drop of .969 points (.8%).

We Apologize for Snow

Because of the near-blizzard, Friday's closing prices for the exchanges were unavailable at press time. Our computer-system tape to update the prices could not be shipped from New York.

Last week we quoted the closing price for Applied Data Research to be 14-1/2, down 19-1/2 from the previous week. This was an error on our part for which we apologize. The correct closing price was 33, down 1 from the previous week.

Earnings Reports

OPTICAL SCANNING CORP.
6 Months Ended Dec. 31

	1967	1968
Revenue	$2,026,221	$4,496,675
Earnings	207,722	386,300
Shr Ernd	.40	.70

a—Restated to conform with presentation of extraordinary item.

MARSHALL INDUSTRIES
6 Months Ended Nov. 30

	1967	1968
Revenue	$10,763,500	$11,326,000
Earnings	309,900	256,500
Shr Ernd	.39	.30

a—Restated to reflect acquisition.

CENTRAL DATA SYSTEMS
6 Months Ended Nov. 30

	1967	1968
Revenue	$161,400	$320,400
Earnings	24,900	46,800
Shr Ernd	.08	.14

COMPUTEST CORP.
8 Months Ended Nov. 30

	1967	1968
Revenue	$2,655,601	$2,951,917
Earnings	136,042	198,687
aShr Ernd	.18	.21

a—Based on average shares outstanding.

HONEYWELL INC.
Year Ended Dec. 31

	1967	1968
Rev.	$1,045,000,000	$1,281,000,000
Earnings	42,300,000	50,500,000
Shr Ernd	2.85	3.41

3 Months Ended Dec. 31

Revenue	$297,000,000	$368,000,000
Earnings	17,000,000	20,000,000
Shr Ernd	1.15	1.35

PROGRAMMING & SYSTEMS
9 Months Ended Nov. 30

	1967	1968
Revenue	$1,151,073	$1,973,021
Earnings	153,747	180,199
aShr Ernd	.06	.07

a—Adjusted for a 4-for-1 stock split.

GRANITE EQUIPMENT LEASING
9 Months Ended Nov. 30

	1967	1968
Revenue	$4,869,000	$11,823,099
Earnings	550,009	1,202,213
aShr Ernd	.43	.84

a—Based on income before special credit.

CONTINENTAL COMPUTER
9 Months Ended Dec. 31

	1967	1968
Revenue	$1,917,361	$3,108,373
Earnings	129,475	256,119
Shr Ernd	.12	.16

EFFICIENT LEASING CORP.
Year Ended Aug. 31

	1967	1968
Revenue	$2,233,000	$4,900,000
Earnings	e41,866	63,915
Shr Ernd	e.19	.18

e—Does not include tax credit.

DATA PRODUCTS CORP.
9 Months Ended December

	1967	1968
Revenue	$15,992,982	$21,710,588
Earnings	e630,470	1,092,735
Shr Ernd	e.18	.26

e—Excludes gain from sale of stock.

POTTER INSTRUMENT CO.
8 Months Ended Dec. 31

	1967	1968
Revenue	$8,701,700	$12,844,700
eEarnings	592,500	1,326,500
bShr Ernd	.25	.52

e—1967 figures adjusted to calendar half-year. b—Includes non-recurring gain.

CALIFORNIA COMPUTER PRODUCTS
6 Months Ended Dec. 31

	1967	1968
Revenue	$7,033,479	$8,934,543
Earnings	460,788	557,072
Shr Ernd	.21	.25

COMPUTER INVESTORS GROUP
9 Months Ended Dec. 31

	1967	1968
Eq. Rents	$1,014,000	$3,292,000
Earnings	226,000	394,000
aShr Ernd	.17	.22

a—As reported by the company.

DIGITAL EQUIPMENT CORP.
8 Months Ended Dec. 28

	1967	1968
Revenue	$23,753,000	$38,897,000
Earnings	2,877,000	3,554,000
$ Ernd	.99	1.19

MEMOREX CORP.
Year Ended Dec. 31

	1967	1968
Revenue	$34,232,372	$59,300,000
eEarnings	3,576,451	4,900,000
Shr Ernd	1.06	1.05

e—Preliminary report. b—Adjusted to reflect debenture conversion and stock split.

AUTOMATIC DATA PROCESSING
6 Months Ended Dec. 31

	1967	1968
Revenue	$7,739,300	$10,762,310
Earnings	706,449	955,645
Shr Ernd	.46	.62

COMPUTER COMMUNICATIONS
Six Months Ended Dec. 31

	1967	1968
Revenue	$370,019	$1,028,159
eEarnings	(14,470)	37,668
bShr Ernd	1.02	.05

e—Includes loss carryforward. b—Based on average outstanding shares.

Contracts

OTTAWA, Canada – The Dominion Bureau of Statistics, Government of Canada, has retained Advanced Computer Techniques Corp., New York, to provide an electronic data processing training program for its staff members. Initially, 45 of the Bureau's personnel will be enrolled.

FALLS CHURCH, Va. – The Naval Air Systems Command has awarded a $43,000 contract to C3, Inc., Falls Church, Va., to design, develop and implement modifications to the Navy's real-time supply system to improve its transaction throughput. Initial designing and testing have begun.

LORTON, Va. – The District of Columbia Department of Vocational Rehabilitation for the training of inmates of the D.C. Youth Center has awarded a contract to The Institute of Modern Procedures, Roslyn and Fairfax, Va., to train youths in keypunching and programming.

Training will be conducted primarily on-site at Lorton with field trips for hands-on computer training at the Institute.

NEW YORK – IBM has selected Addo-X, Inc. to supply modified models of a data recorder to be used with the IBM 2907 batch recording system. Deliveries on the $500,000 contract are to be made over an extended period starting in February.

NEW YORK – Allis Chalmers has concluded negotiations with Diebold Computer Leasing for the lease of models of the IBM 360 with an original cost in excess of $10 million which will be located in cities throughout the country.

PHOENIX, Ariz. – Manufacturers' Lease Plans, Inc., a subsidiary of Systems Capital Corp., Philadelphia, has signed a rental plan contract with Data Computing, Inc. for rental of terminal equipment. Under the terms of the contract, DataCom will build its units and market them to customers of computer time-sharing firms. Manufacturers' Lease Plans will buy the equipment at the regular list price and pay DataCom for its marketing services.

LOS ANGELES – Several new educational contracts valued at about $1.4 million have been awarded to Computing and Software, Inc. by federal and state governmental agencies for the continuation of occupational training programs at the Community Skill Center and the Pro-Vocation Center in Los Angeles.

BATTLE CREEK, Mich. – The Defense Logistics Services Center has selected Information Company of America, Philadelphia, to provide a system design, concept of operation, and plan for retrieval, reproduction, and handling of Federal Item Identification. These identifications are used in the Federal Cataloging Program and serve the needs of logistics managers throughout the federal government.

SILTLAND, Md. – The design and development of an interface logic unit for the Naval Reconnaissance and Technical Support Center has been completed by Digital Products Corp., Ft. Lauderdale, Fla. The value of the contract was $11,796. The unit is used to transform aerial photographs into a map or maps for technicians to use in tracing and digitizing information.

REDWOOD CITY, Calif. – General Automation, Inc. has selected Ampex Corp. to supply core memory stacks for incorporation in general purpose and automation computers. Delivery on the $200,000 contract will extend through 1969.

ST. PAUL, Minn. – General Dynamics Corp. has awarded a subcontract to Univac for development work on the Navy's Advanced Surface Missile System.

SHERMAN OAKS, Calif. – Dean Witter & Co., Inc., a brokerage house, has selected Informatics, Inc. for the design, development, and implementation of a total computer system that will encompass all aspects of the firm's research, clearance, accounting, and management activities. The software will be Compsee, which has the Mark IV file management system base.

Burroughs EDP Marketing Organization Reassigned

DETROIT – Burroughs Corp. recently announced an organizational change which consolidates its federal government activities.

The realignment gives the company's Defense, Space and Special Systems Group responsibility for marketing Burroughs' complete product line of commercial electronic data processing systems, accounting machines and systems, and general business machines to federal government agencies.

The Group will continue to design, manufacture, and market custom data processing systems for defense, space, and other government programs.

Burroughs Defense, Space and Special Systems Group is headquartered in Paoli, Pa., employs over 6,000 persons, a large percentage of whom are technically trained, and operates nine engineering and manufacturing facilities in the Pennsylvania/New Jersey area.

The Group has engaged in defense and space system design since 1949 and has been a major supplier of advanced equipment for continental air defense, air traffic control, and special data processing, message switching and display systems for all of the armed services. Its computers guided the early Atlas ICBM's and were responsible for the launch guidance of all of the Mercury and Gemini astronauts.

Kempner on Redcor Board

CANOGA PARK, Calif. – Thomas L. Kempner, Jr., has been appointed to the board of directors of Redcor Corp.

Kempner is a general partner of Loeb, Rhoades & Co., New York investment bankers who have privately placed 52,941 shares of Redcor common stock and who recently assisted in negotiations leading to Redcor's acquisition of Decade Computer Corp., a manufacturer of low-cost desktop computers located in Huntington Beach, Calif.

Kempner is also a director of First Charter Financial Corp. and is also a board member of Standard Computer Corp. and The Bisset-Berman Corp.

Mutuals Buy Bedrij

NEW YORK – Bedrij Securities announced today the completion of private financing for Advanced Memory Systems, Inc.

The major investors in the group consist of a number of mutual funds active in the growth venture area.

Advanced Memory Systems, with headquarters in Sunnyvale, Calif., intends to design and manufacture products related to data processing and storage.

Kentucky Gets Software

PADUCAH, Ky. – The first firm emphasizing software in western Kentucky and the lower midwest has been established in Paducah.

Called Computer Program Consultants, Inc., the new firm is a division of Edward T. Hannsn & Associates, Inc., Engineers to Industry, with offices in both Paducah and Evansville, Ind.

Infodata Establishes Executive Offices

ROCHESTER, N.Y. – Infodata Systems Inc. of Rochester, N.Y., and Washington, D.C., has established executive offices and an IBM 360 Center at the West Webster Professional Building, 680 Ridge Rd., Webster, N.Y.

The computer service company, which went public in July, 1968, has opened its first computer center in Rochester, N.Y., and specializes in the development and marketing of proprietary program packages and programming and systems services.

The firm recently announced Inquire, an information storage and retrieval system for IBM 360 users.

CalComp Adds Australia

ANAHEIM, Calif. – Dynamco Electronics Pty. Ltd., with offices in Sydney and Melbourne, has been appointed Australian representative for California Computer Products, Inc.

Dynamco distributes computer data handling devices produced in the United States and Great Britain, and produces modules for combination with imported equipment in special purpose systems.

Cohen Now MetaSystems

TRENTON, N.J. – Leo J. Cohen Associates, software specialists, has announced the change of their company name to MetaSystems Corporation in recognition of their expanding involvement in all areas of the computing sciences.

As MetaSystems Corp., the company will continue in the design and development of specialized software items in the areas of simulation, high-level languages, and operating systems as well as expand into other proprietary areas of software development.

The corporate home offices will remain in Trenton, N.J.

Programs Office Opened

NEW YORK – Intertech Research Services, Inc. has organized a special office for major programs.

The major programs office will be concerned with the acquisition and management of government support contracts, large consulting and software efforts, and turnkey management operations.

Acquisitions

Negotiations Terminated

SCOTTSDALE, Ariz. – Merger negotiations between Dickson Electronics Corp. and Electronic Memories, Inc. have been terminated.

Unionamerica Computer and Computer Input

LOS ANGELES – Unionamerica Computer Corp., a subsidiary of Union Bancorp, announced an agreement in principle to acquire a controlling interest in Computer Input Corp., a computer services company, for an undisclosed consideration. CIC will operate as an affiliate of Unionamerica Computer within the Union Bancorp group.

Computing and Software and Retail Merchants Credit

LOS ANGELES – Computing and Software, Inc. announced it has acquired the assets and business of the Retail Merchants Credit Assoc. of Los Angeles for an undisclosed amount of cash. The association, as well as presently-owned Consumer Credit Clearance, will be operated by Computer Credit Corp., a wholly-owned subsidiary of Computing and Software.

Advanced Computer Techniques and Informa-Tab

NEW YORK – Advanced Computer Techniques, a computer-services firm, announced that it had reached an agreement to acquire the total assets of Informa-Tab, Inc., a New York market research data processing company for an undisclosed amount of ACT stock. Informa-Tab will become an operating subsidiary of ACT.

3i Co. Acquires 7

PHILADELPHIA – Information Intersciences Inc. announced basic agreement to acquire seven organizations for 3i Company stock. The organizations are North Dade Medical Group, Inc. and its wholly-owned subsidiary, Parkway General Hospital, N. Miami Beach, Fla.; Park Associates, Inc., d/b/a Lincoln Community Hospital, Buena Park, Calif.; Management and Planning Associates of Miami, Fla.; Computer Aided Medical Diagnosis, Inc., N.J.; Computer Predictions Co., Minn.; Object Recognition Systems, N.J.; and Medical Diagnostic Labs., N.J.

Data Products and Datel

CULVER CITY, Calif. – Data Products Corp. announced that discussions are underway regarding the acquisition of Datel Corp. Terms of the acquisition have not been finalized and are dependent upon completion of negotiations, corporate approvals, and review by regulatory agencies.

Qatron Corp. and Time-Sharing Terminals

WASHINGTON, D.C. – Qatron Corp., Rockville, Md., has agreed in principle to acquire 25% of the outstanding stock in Time-Sharing Terminals, Inc., a computer leasing company, for $125,000 subject to approval of its board of directors.

Com- Share to Extend Its Services To Canada though Toronto Firm

ANN ARBOR, Mich. – Com-Share, Inc., a national time-sharing computer service firm, announced today that it will extend its time-sharing services into Canada under a technical service agreement with Computer Sharing of Canada (CSC).

The agreement with CSC extends Com-Share services throughout North America.

Under the terms of the agreement, the Toronto-based firm will be considered the sole distributor of Com-Share's standard commercial services in Canada.

CSC customers will have access to the Com-Share system through communications equipment and transmission lines maintained by Com-Share. CSC will also install and maintain standard remote-terminal equipment approved by Com-Share.

SDS Expands to Israel

LOS ANGELES – Scientific Data Systems, Elbit Computers of Israel, and the Discount Bank Investment Corp. of Israel announced the creation of a new company, SDS Israel Ltd., Haifa, Israel. The new company will engage in the development, manufacture, and sale of computer peripheral systems and components primarily in the European and International marketplace.

Unidat Adds Space

NEW YORK – Unidat Corp., a computer services firm, has leased 10,000 sq. ft. of space at 42 Broadway for computer installation, keypunch operations, programming control, and customer referral storage facilities.

Programming Sciences Opens Branch Office

NEW YORK – Programming Sciences Corp. announced that its Peripheral Sciences Div. has opened a branch office in Century City, Los Angeles. Donald F. Biresch was appointed to manage the office.

Computer Environments Adds Franchise Division

HANOVER, N.H. – Computer Environments Corp. announced that it has developed a franchising program for its computer education centers and will market the program through its new Franchising Division. Frederick S. Bartlett will head the new operation.

Telecomputing Moves to New Building

DALLAS – Telecomputing, Inc., a teleprocessing firm, has moved into new quarters at 1626 Edison St. The company serves credit unions and savings and loan associations with teleprocessing programs, using an IBM 360/40 with remote communications capability.

BUY SELL SWAP

WANTED: The IBM 1410 Emulator for a 360/40 system, IBM feature No. 4478. We are willing to purchase and we will pay for any field engineering cost incurred. Contact Mr. L. Krasner, (212) 687-2100, Strategic Datacenters, Inc., 605 Third Avenue, New York, N.Y.

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New Registrations

COMPUTER TASK GROUP, Inc., 5586 Main St., Buffalo, N.Y., a computer services company, filed to register 160,000 shares of common stock. Proceeds, at $1.25 per share, intended for payment of short-term debt, dividends, development, and working capital. The underwriter is Globus, Inc., 25 Broadway, New York 10004.

MANAGEMENT SERVICES, Inc., 1536 Ounex Hill Lane, N.E., Atlanta, a computer services company, filed to register 100,000 shares of common stock. Proceeds, at $4 per share maximum, intended for equipment investment, development, and working capital. The underwriter is Courts & Co., 11 Marietta St., N.W., Atlanta 30303.

CRC COMPUTER RADIX Corp., 114 E. 40th St., New York 10016, filed to register 160,000 shares of common stock and 80,000 redeemable warrants. Proceeds, in units consisting of two shares and one warrant, at $10 per unit maximum, intended for repayment of debt, expansion, and working capital. The underwriter is Gregory & Sons, 40 Wall St., New York, N.Y. 10005.

LEVIN-TOWNSEND COMPUTER Corp., 445 Park Ave., New York, a computer leasing company, filed to register $35,000,000 of convertible senior subordinated debentures, due 1989. Proceeds, price to be supplied by amendment, intended for repayment of debt and for equipment investment. The underwriter is Kuhn, Loeb & Co., 40 Wall St., New York 10005.

COMPUTER COLLEGE OF TECHNOLOGY, Inc., 800 71st St., Miami Beach, Fla., a correspondence school, filed to register 200,000 shares of common stock. Proceeds, at $5 per share, intended for repayment of short term indebtedness, preparation of courses, and sales and marketing. The underwriter is Laurence Taylor & Co., Inc., 665 Fifth Ave., New York, N.Y. 10022.

INTERNATIONAL TELECOMPUTER NETWORK Corp., 4919 Fitzmount Ave., Bethesda, Md. 20014, a computer services company, filed to register 185,000 shares of common stock. Proceeds, at $12 per share maximum, intended for working capital. The underwriter is S.R.H. Securities Corp., 55 Broad St., New York, N.Y.

DIGITAL TECHNOLOGY Corp., Crest Rd., Huntington Bay, N.Y. 11743, filed to register 200,000 shares of common stock. Proceeds, at $4 per share, intended for research and development and working capital. The underwriter is Dunhill Securities Corp., 21 West St., New York 10007.

Management Data Makes Amex

NEW YORK — The American Stock Exchange has admitted to the listing and the dealings on the common shares of Management Data Corp.

Trading opened on 1400 shares at $33.50. The ticker symbol is MNY.

Management Data was incorporated in 1967 to succeed Middle Atlantic Financial Corp. and operates in three major areas: computer and general equipment leasing; commercial, equity, and consumer financing; and management services.

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L.E. Donegan, Jr.	Vice-President Marketing Operations	RCA Information Systems	Vice-President Service Bureau	IBM
Jerry L. Marchbanks	Vice-President	Computer & Business Management, Inc.	Manager	Ernst & Ernst San Antonio, Texas
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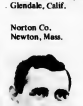
K. Holmes

PPG Industries, Inc., Pittsburgh, Pa., has placed a $3.2 million order with Burroughs for six B2500 computer systems.

The units will be installed in PPG's consumer paint plants and will be used to integrate each plant's data handling functions into a standardized data management system.

Initial installation is planned for October at the company's Pittsburgh headquarters. Installation of the remaining systems will begin in June, 1970.

The Norwegian Postal Giro, Oslo, Norway, has installed an optical character recognition system purchased from Recognition Equipment Inc., Dallas, Texas, to process daily inpayment transactions for the Norwegian citizens.

The purchase was made through AB Recognition Equipment Industri, Scandinavian subsidiary of Recognition Equipment.

Douglas Aircraft, Long Beach, Calif., has placed an $800,000 order with Astrodata, Inc., Anaheim, Calif., for a hybrid computing system to be used for general simulation purposes on the McDonnell Douglas DC-10 program.

Greyhound has ordered 45 high-speed data storage and automatic retrieval systems from HF Image Systems Inc., Culver City, Calif., for installation in the New York bus terminal and offices of its Eastern Greyhound Lines Div.

The new equipment will be used in telephone information centers, ticket counters, and tours positions.

The Society for Savings, Hartford, Conn., has ordered a $1.5-million computer system from Honeywell EDP, Wellesley Hills, Mass., to include 61 on-line teller stations. The unit replaces a Teleregister system installed in 1961.

Tracor Delays Computer Branch Common Filing

AUSTIN, Texas – Tracor Inc. has delayed filing with the SEC a rights offering for 53% of the common shares of Tracor Computing Corp. to permit the subsidiary to include current financial statements in the prospectus.

The proposed offering would give Tracor common shareholders the right to purchase one Tracor Computing share for each one of Tracor held.

TCC was established to provide computing services to business, industry, government agencies, and educational institutions by transferring to TCC the computer business presently conducted by Tracor and its affiliates.

President Richard N. Lane said the offering isn't expected to be filed until after April 30. Lane added that it is anticipated that the rights offering price will be $2 a share.

Tracor would continue to hold 47% of the subsidiary.

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